

COMMONWEALTH OF PENNSYLVANIA.

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DEPARTMENT OF AGRICULTURE.

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BULLETIN No. 87.

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GIVING AVERAGE COMPOSITION OF FEEDING  
STUFFS.



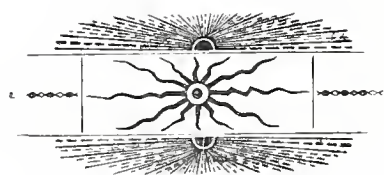
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## PREFACE.

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Harrisburg, Pa., December 2, 1901.

The following Bulletin, No. 87, containing the law relating to the sale of Concentrated Commercial Feeding Stuffs in this State, and two tables giving the average composition of the various feeding stuffs, is issued for the information of manufacturers and dealers handling this class of goods, as well as for the feeder who purchases or uses them.

At the request of the Secretary, Dr. Wm. Frear, chemist of the State Experimental Station, has prepared a paper showing the method of calculation of the composition of mixed feeds, which is also included.

There is also given a table, taken from a bulletin issued by the Vermont Agricultural Experiment Station, No. 81, giving the nutritive value of feeds from varying weights. This table is a convenience to the stock feeder, inasmuch as the calculations are already made, and the value of a given number of pounds of any feed, can be seen at a glance.

The concentrated commercial feeding stuffs law, is intended to protect dairymen and stock feeders against fraud in the purchase of cattle foods, and to prevent the adulteration of these foods without notice to the purchaser.

The feeding stuffs that must be accompanied with an analysis showing the percentage of crude fat and of crude protein are

Linseed meals,	Dried brewers' grains,
Cotton seed meals,	Malt sprouts,
Gluten meals,	Hominy foods,
Maize feeds,	Cerealine feeds,
Starch feeds,	Rice meals,
Sugar feeds,	Ground beef or fish scraps,
and all other materials of similar nature.	

The act exempts

Hays, straws and mixed meals made directly from the entire grains of	Oats,
Wheat,	Indian corn,
Rye,	Buckwheat,
Barley,	Broom corn.

Neither does it include wheat, rye or buckwheat bran, or middlings, not mixed with other substances, and sold separately as distinct articles of commerce.

If farmers and cattle feeders will keep in mind the fact that the carbohydrates, in the rough forage which they raise, are out of proportion for feeding purposes to the nitrogenous material in their crops, they will sell the surplus of highly carbonaceous matter, and purchase protein, sufficient to construct a properly balanced ration when mixed with the carbohydrates which they have retained. This exchange can often be effected at an actual profit to the farmer, without counting the increased growth and productiveness of his stock, occasioned by feeding the improved ration.

All who purchase cattle foods are interested in the enforcement of this law. Whenever, therefore, a concentrated food, as defined in the act, is found upon the market unbranded, notice of its sale should be at once given to the Secretary of Agriculture, Harrisburg, Pa., so that the sale may be investigated and the person violating the law be arrested and punished.

The method of sampling, and the persons authorized to perform this work are specified in the act.

JOHN HAMILTON,  
Secretary of Agriculture.

## CALCULATION OF THE COMPOSITION OF MIXED FEEDS.

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BY DR. WM. FREAR, *Chemist of the Penna. State Agr. Expt. Station.*

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The recent act regulating the manufacture of mixed and concentrated cattle foods in Pennsylvania requires, that to each package, or lot of the foods, included under the provisions of the act, shall be attached a brand and a guaranty of the percentage of protein and fat the goods contain. Many inquiries have been received from manufacturers and dealers for information enabling them to comply with the guaranty requirement.

Where the quantities of the goods sold permit their manufacture in large quantities, so that considerable values are involved, the guaranty should be based upon an analysis of a carefully drawn, representative sample of each lot manufactured; or upon calculations from the quantities and composition of the ingredients\* used; the latter being either purchased upon guaranty or themselves separately analyzed.

*The State has made no provision for the analysis, at public cost, of manufacturers' samples.*

*A word of caution to those desiring to send samples of feed-stuffs to a chemist for analysis:* It is just as important in the determination of the composition of a material as a basis for its sale under guaranty, that the sample shall be thoroughly representative, as that the analysis shall be made accurately. Perfect mixing of feed-stuffs is difficult, especially if fine, dense particles be mixed with coarse, light materials, such as oat hulls, bran, etc. A handful of the mixture taken at random from the top of a heap or bin is not at all likely to represent the average composition of the entire mass. To secure such a sample, portions must be drawn from different parts of the heap or bin, especially from the bottom and interior as well as from the top and exterior; the several portions so

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\*Note. In this circular the term "ingredient" refers to the individual feeding stuffs that are used in making a mixture, oats, middlings, corn chop or rye bran, for example; the term "constituent" refers, on the other hand, to the several groups of chemical substances of which plant materials, and each ingredient as such, are composed as protein, fat, fiber, ash, etc.

drawn should, according to quantity taken, be placed upon a clean, smooth floor, sheet or paper, thoroughly mixed and then quartered; if the quantity in one of the quarters of the heap of combined subsamples is too much to submit for analysis, repeat with it the process to which the larger quantity of material has been subjected; and so on, until the quantity is reduced to a convenient amount for mail or express. Of fine-ground materials, four to eight ounces is usually sufficient; of coarser feeds, send double or treble this amount.

There are many cases, however, in which the quantity sold of any particular mixture is so small that the expense of analysis seems relatively high; and some other method of fixing upon a safe guaranty is sought. The composition of the mixture can readily be computed from the weights of the several ingredients and their respective percentage compositions, where these facts are known.

The ingredients commonly employed may be regarded as belonging to two quite distinct classes, the first, including whole grains or their milling products prepared under the ordinary conditions of milling by the mixer himself; the second, including proprietary mixtures or other materials bought from parties and concerning whose composition often little is certainly known.

Jenkins and Winton gathered together some years ago, the results of American analysis of the first class of ingredients, and presented them in tabular form so as not only to show their average composition in the more important constituents, but also the extreme variations in percentage of the several constituents that have been found in America. An abstract of that table is appended to this circular. (See Table No. I).

No such exact knowledge is possessed concerning the second class of ingredients, not only because they have been produced by others than the mixer and are therefore subject to adulterations of which he can have no knowledge, but also because the materials are often mixtures that vary in their composition because of a change in the manufacturing methods as a result of which they are produced; or that are varied by the makers from time to time as their profit may indicate. The local mixer is, in such case, compelled either to buy them under guaranty of composition from responsible parties or to have them analyzed. The results of analysis of a large number of such of these feeds as find their way to the retail market are presented in Bulletin No. 81 of the Department, which can be had upon application.

## HOW TO USE THE TABLES OF ANALYSIS.

1. *To determine upon a percentage for guaranty:* All the raw or unmanufactured feeding-stuffs are seen, by reference to the tables, to vary considerably in composition; there is no certain indication



afforded by external appearance or simple physical test of the extent nor even in many cases of the direction in which a particular lot of any given material will depart in composition from the average feed of its kind. When all external qualities indicate that the feed is of good grade, the tendency, under conditions of strong competition, is to offer a guaranty high for goods of its class; but because appearances are often deceptive, the wise rule is *to guarantee the presence of no larger quantity of the several valuable ingredients that one may, with fair certainty, assume to be present*. This rule does not require that the guaranty shall be no higher than the lowest ever found for the kind of material in question, because these extreme figures usually attend some abnormality of growth or development; the rule would indicate, however, that for the purposes of guaranty, in the absence of the specific knowledge concerning the composition of the lot of goods employed which their analysis would afford, some figure between the average and the lowest should be chosen. To illustrate, the percentages of protein and fat given in the table for common, yellow dent corn are:

	Protein.	Fat.
Lowest, .....	7.5	3.1
Highest, .....	11.8	7.5
Average, .....	10.3	5.0

A great many samples of corn that appear to be of at least average quality, contain less than 10 per cent. of protein and 5 per cent. of fat. The percentage midway between the lowest and the average, that is, 9 per cent. for protein and 4 per cent. for fat, are the highest that can safely be adopted for guaranty in the absence of direct analysis of the goods in hand for use in any given mixture.

2. *To calculate the composition, for purposes of guaranty, of a mixture of feeding-stuffs, when the compositions and quantities of each ingredient of the mixture are known:*

Rule. In the case of each constituent required to be included in the guaranty, determine the number of pounds of it which each ingredient of the mixture supplies; this is done by multiplying the guaranty percentage of the constituent in each ingredient by the number of hundredweight of the latter used in the mixture. Next, ascertain the total amount of the constituent in the mixture by adding the amounts of it supplied by the several ingredients used. Finally, divide the sum thus obtained, by the number of hundredweights of the entire mixture; the result of this division is the guaranty percentage of this particular constituent for the entire mixture.

For example, let the problem be to determine the percentages of protein and fat to be stated in the guaranty for a mixture of 5,000 pounds of corn, 4,000 pounds of oats and 1,000 pounds of spring wheat bran. The guaranty percentage for the corn have been determined, those for the oats and bran remain to be fixed. The percentages of protein and fat given in the table for these feeds are:

	Oats.		Spring Wheat Bran.	
	Protein.	Fat.	Protein.	Fat.
Lowest, .....	8.9	3.4	14.3	3.6
Highest, .....	14.4	5.8	18.1	5.0
Average, .....	11.8	5.0	16.1	4.5

Pursuing the method adopted in the case of the corn, the following guaranty percentages are obtained:

	Protein.	Fat.
Oats, .....	10.3	4.2
Bran, .....	15.2	4.0

The calculation of the percentages of protein and fat in the mixture is made as follows:

Feed.		Protein.		Fat.	
Kind.	Cwt. used in mixture.	Per cent. in ingredients.	Pounds supplied by ingredients used.	Per cent. in ingredients.	Pounds supplied by ingredients used.
Corn, .....	50.X	9.0	450	4.0	200
Oats, .....	40	10.3	412	4.2	168
Bran, .....	10	15.2	153	4.0	40
Total weight, .....	100		100)1,014		100)408
Percentages required, .			10.14		4.08



3. *To calculate the quantities in which to combine certain ingredients of determined composition so as to make a mixture of a given composition:* In the first place, let the fixed point in the mixture be its percentage of but one of those constituents required to be named in the guaranty; protein may be taken, since it is the most expensive component, that for which concentrated feeds are chiefly sought and, at the same time, that which is most variable in percentage in the various ingredients used for mixing.

The simplest problem of this sort, is to determine the proportions in which to mix two known feeds to secure a mixture containing a given protein percentage. The percentage in the mixture must, of necessity, lie between those of the ingredients. Let the question be in what proportions to mix corn meal and pure buckwheat middlings, pure, so as to obtain a mixture having 14 per cent. of protein. The guaranty percentages of the two ingredients are: Corn meal, 8.1 per cent. protein, 2.9 per cent. fat; buckwheat middlings, 27 per cent. protein, 6.4 per cent. fat. Since the term *per cent.* means simply parts per bushel, it follows that 100 pounds of the two ingredients will contain, respectively, 8.1 and 27 pounds of protein, while every hundredweight of the mixture should have 14 pounds. That is, every hundredweight of corn meal will bring 5.9 pounds too little, while the same weight of buckwheat middlings will contribute an excess of 13 pounds. Obviously, only so much of the buckwheat middlings should be mixed with one hundredweight of the corn meal as will balance, by the protein it contributes in excess of the requirement, the deficiency of the corn meal. Since 100 pounds of middlings contains an excess of 13 pounds of protein, to supply an excess of 5.9 pounds of protein will require but  $5.9 \div 13$  of 100, or 45.4 pounds of the middlings. The mixture should therefore contain 45.4 pounds of the middlings for every hundredweight of the meal used. From the fat percentages given above and these proportions of the ingredients, it can be calculated by the method stated for the second class of problems, that the guaranty percentage of fat in this mixture would be 3.92.

A very similar problem is that in which it is desired to ascertain in what proportions to use a highly nitrogenous material to balance up a mixture of less rich feeds whose quantities are already determined. Suppose, for example, that a mixer, having a corn and oats chop composed of 5,000 pounds of corn and 4,000 pounds of oats, desires to determine how much spring wheat bran must be added to produce a mixture having 11 per cent of protein. The calculation of problem two has shown that the 90 cwt. of mixed chop contains 862 pounds or 9.58 per cent. of protein and 368 pounds or 4.09 per cent. of fat. That is, the corn and oats alone form a mixture having 11 minus 9.58, or 1.42 pounds too little protein for every hundredweight

of the chop or 127.8 pounds too little in the entire 90 cwt. The excess protein in the bran, having a guaranty percentage of 15.2 per cent. is 4.2 pounds per cwt. To supply 127.8 pounds of such excess would therefore require  $127.8 \div 4.2$ , or 30.43 cwt. of the bran. The guaranty percentage of fat in the bran being 4 per cent. the bran would supply 121.7 pounds of fat; this added to the 368 pounds of the chop, would make 489.7 pounds in the mixture; since the latter has a weight of 9,000 plus 3,043 pounds, or 12,043 pounds, the percentage of the fat in the mixture must be 4.07 per cent.

4. The mixer has, however, more complex problems. It is often needful to determine not only how much but what kind of a balancing material to use in a brand of feeding-stuff whose main materials are already fixed, though it may be that the main ingredients may be varied in proportion according to the circumstances of supply and cost, which also affect the selection of the balancing material. Sometimes, too, it is desired to prepare a mixture which shall have not only a fixed percentage of portein, but of fat as well. In both sets or problems, the unknown quantities are too numerous to allow the formulation of any simple rule of calculation. The mixer must try, one after another, such a succession of proportions and ingredients as he may regard likely to meet his need, until he shall succeed in finding a combination nearly such as he desires. In each trial, however, he will find the methods already given, useful for his purpose.

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TABLE No. I.

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Composition of Feeding Stuffs.

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Giving the Maximum, Minimum and Average for Each Ingredient.

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From Farm Bulletin No. 22 of the Department of Agriculture, Washington, D. C.

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## COMPOSITION OF FEEDING STUFFS.

Giving the Maximum, Minimum and Average for Each Ingredient.

From Farm Bulletin No. 22 of the Department of Agriculture, Washington, D. C.

The figures given do not represent the results of single analyses, but are the highest and lowest results which have been found in the case of each ingredient. *They are given to show the limits within which each ingredient has been found to vary.*

## Composition of Feeding Stuffs.

	Water.	Ash.	Protein.	Fiber.	Nitrogen-free extract.	Fat.	Number of analyses.
GREEN FODDER.							
Corn fodder:*							
Flint varieties—	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	
Minimum, .....	51.1	0.7	0.6	2.1	4.3	0.3	.....
Maximum, .....	90.8	1.8	4.0	11.4	36.3	1.3	.....
Average, .....	79.8	1.1	2.0	4.3	12.1	0.7	40
Flint varieties cut after kernels had glazed—							
Minimum, .....	69.7	0.9	1.5	3.0	10.0	0.6	.....
Maximum, .....	83.7	1.7	2.7	6.1	19.7	1.3	.....
Average, .....	77.1	1.1	2.1	4.3	14.6	0.8	10
Dent varieties—							
Minimum, .....	59.5	0.6	0.5	2.0	3.0	0.1	.....
Maximum, .....	93.6	2.5	3.8	11.0	27.0	1.6	.....
Average, .....	79.0	1.2	1.7	5.6	12.0	0.5	63
Dent varieties cut after kernels had glazed—							
Minimum, .....	59.5	1.0	1.0	5.4	11.6	0.4	.....
Maximum, .....	80.7	2.2	3.3	8.5	27.0	1.6	.....
Average, .....	73.4	1.5	2.0	6.7	15.5	0.9	7

\*Corn fodder is the entire plant, usually a thickly planted crop. Corn stover is what is left after the ears are harvested.



## Composition of Feeding Stuffs.—Continued.

	Water.	Ash.	Protein.	Fiber.	Nitrogen-free extract.	Fat.	Number of analyses.
GREEN FODDER—Continued.							
Sweet varieties—	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	
Minimum, .....	69.3	0.8	0.9	1.9	3.2	0.1	.....
Maximum, .....	92.9	2.6	2.7	8.5	19.4	1.0	.....
Average, .....	79.1	1.3	1.9	4.4	12.8	0.5	21
All varieties—							
Minimum, .....	51.5	0.6	0.5	1.9	3.0	0.1	.....
Maximum, .....	93.6	2.6	4.0	11.4	36.3	1.6	.....
Average, .....	79.3	1.2	1.8	5.0	12.2	0.5	126
Leaves and husks, cut green—							
Minimum, .....	57.9	2.1	1.8	6.6	16.7	1.0	.....
Maximum, .....	71.5	4.4	2.4	12.5	22.2	1.3	.....
Average, .....	66.2	2.9	2.1	8.7	19.0	1.1	4
Stripped stalks, cut green—							
Minimum, .....	74.5	0.6	0.4	6.7	14.2	0.4	.....
Maximum, .....	77.4	0.8	0.6	8.8	16.0	0.6	.....
Average, .....	76.1	0.7	0.5	7.3	14.9	0.5	4
Rye fodder:							
Minimum, .....	74.4	1.3	2.3	4.7	4.9	0.2	.....
Maximum, .....	84.3	2.4	3.0	14.9	12.4	0.7	.....
Average, .....	76.6	1.8	2.6	11.6	6.8	0.6	7
Oat fodder:							
Minimum, .....	31.3	1.5	1.5	7.1	10.8	0.4	.....
Maximum, .....	78.6	4.2	6.1	16.8	39.8	3.0	.....
Average, .....	62.2	2.5	3.4	11.2	19.3	1.4	6
Redtop,* in bloom:							
Minimum, .....	51.5	1.7	2.0	8.0	11.7	0.6	.....
Maximum, .....	76.2	2.9	4.3	15.7	21.9	1.1	.....
Average, .....	65.3	2.3	2.8	11.0	17.7	0.9	5
Tall oat grass, † in bloom:							
Minimum, .....	62.3	1.6	1.7	9.2	13.0	0.6	.....
Maximum, .....	73.5	3.0	3.3	9.7	20.7	1.5	.....
Average, .....	69.5	2.0	2.4	9.4	15.8	0.9	3
Orchard grass, in bloom:							
Minimum, .....	66.9	1.6	1.9	5.8	9.9	0.7	.....
Maximum, .....	77.3	2.9	4.1	11.1	16.6	1.3	.....
Average, .....	73.0	2.0	2.6	8.2	13.3	0.9	4
Meadow fescue, in bloom:							
Minimum, .....	67.6	1.6	1.8	10.2	12.5	0.7	.....
Maximum, .....	73.2	2.0	2.7	11.3	15.7	1.1	.....
Average, .....	69.9	1.8	2.4	10.8	14.3	0.8	4
Italian rye grass, coming into bloom:							
Minimum, .....	69.6	2.1	2.6	5.5	11.5	1.1	.....
Maximum, .....	76.6	2.8	3.8	7.5	15.4	1.6	.....
Average, .....	73.2	2.5	3.1	6.8	13.3	1.3	24
Timothy, ‡ at different stages:							
Minimum, .....	47.0	1.4	1.3	5.1	10.1	0.6	.....
Maximum, .....	78.7	3.2	3.8	19.4	28.6	2.0	.....
Average, .....	61.6	2.1	3.1	11.8	20.2	1.2	56
Kentucky blue grass, § at different stages:							
Minimum, .....	51.7	1.6	2.4	3.8	6.5	0.8	.....
Maximum, .....	32.5	4.8	7.2	13.4	25.6	1.9	.....
Average, .....	65.1	2.8	4.1	9.1	17.6	1.3	18

\*Herd's grass of Pennsylvania.

†Meadow oat grass.

‡Herd's grass of New England and New York.

§June grass.

## Composition of Feeding Stuffs.—Continued.

	Water.	Ash.	Protein.	Fiber.	Nitrogen-free extract.	Fat.	Number of analyses.
GREEN FODDER—Continued.							
Hungarian grass:	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	
Minimum, .....	62.7	1.9	2.8	7.6	9.1	0.5	.....
Maximum, .....	78.3	2.2	3.2	10.8	20.1	1.1	.....
Average, .....	71.1	1.7	3.1	9.2	14.2	0.7	14
Red clover, at different stages:							
Minimum, .....	47.1	0.9	1.7	1.8	3.5	0.3	.....
Maximum, .....	91.8	4.0	7.1	14.7	25.8	1.8	.....
Average, .....	70.8	2.1	4.4	8.7	13.5	1.1	43
Alsike clover,* in bloom:							
Minimum, .....	72.3	1.9	3.6	5.3	10.8	0.6	.....
Maximum, .....	77.3	2.1	4.2	9.4	11.5	1.2	.....
Average, .....	74.8	2.0	3.9	7.4	11.0	0.9	4
Crimson clover:							
Minimum, .....	78.4	1.4	2.7	3.5	7.0	0.6	.....
Maximum, .....	84.6	2.0	3.5	6.3	9.7	0.8	.....
Average, .....	80.9	1.7	3.1	5.2	8.4	0.7	3
Alfalfa,† at different stages:							
Minimum, .....	49.3	1.8	3.5	2.5	10.8	0.6	.....
Maximum, .....	82.0	5.1	7.7	14.8	11.5	1.2	.....
Average, .....	71.8	2.7	4.8	7.4	12.3	1.0	23
Serradella, at different stages:							
Minimum, .....	65.6	1.8	2.1	2.0	3.9	0.4	.....
Maximum, .....	84.6	5.8	3.6	7.8	17.1	1.8	.....
Average, .....	79.5	3.2	2.7	5.4	8.6	0.7	9
Cowpea:							
Minimum, .....	72.8	1.2	1.5	1.7	1.8	1.2	.....
Maximum, .....	93.1	2.7	3.5	15.2	12.9	0.6	.....
Average, .....	83.6	1.7	2.4	4.8	7.1	0.4	10
Soja bean:							
Minimum, .....	63.3	1.8	2.2	4.8	5.8	0.5	.....
Maximum, .....	81.5	5.1	5.9	9.7	16.0	1.6	.....
Average, .....	75.1	2.6	4.0	6.7	10.6	1.0	27
Horse bean:							
Average, .....	84.2	1.2	2.8	4.0	6.5	0.4	2
Flat pea ( <i>Lathyrus sylvestris</i> ):							
Average, .....	66.7	2.9	8.7	7.9	12.2	1.6	2
Rape:							
Average, .....	84.5	2.0	2.3	2.6	8.4	0.5	2
SILAGE.							
Corn silage:							
Minimum, .....	62.4	0.3	0.7	3.0	5.1	0.2	.....
Maximum, .....	87.7	3.3	3.6	10.5	24.2	2.0	.....
Average, .....	79.1	1.4	1.7	6.0	11.0	0.8	99
Sorghum silage:							
Minimum, .....	71.9	0.8	0.6	5.9	13.8	0.1	.....
Maximum, .....	78.0	1.2	0.9	6.8	19.0	0.5	.....
Average, .....	76.1	1.1	0.8	6.4	15.3	0.3	6
Red clover silage:							
Minimum, .....	61.4	1.9	3.0	5.1	8.1	0.9	.....
Maximum, .....	78.6	3.0	5.9	13.9	14.3	1.6	.....
Average, .....	72.0	2.6	4.2	8.4	11.6	1.2	.....
Soja bean silage:							
Average, .....	74.2	2.8	4.1	9.7	6.9	2.2	1

\*Swedish clover.

†Lucern.

## Composition of Feeding Stuffs.—Continued.

	Water.	Ash.	Protein.	Fiber.	Nitrogen-free extract.	Fat.	Number of analyses.
GREEN FODDER—Continued.							
Cowpea vine silage:	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	
Average, .....	79.3	2.9	2.7	6.0	7.6	1.5	2
Field pea vine silage:							
Average, .....	50.1	3.5	5.9	13.0	26.0	1.6	1
Silage of mixture of cowpea vines and soja bean vines, average, .....	69.8	4.5	3.8	9.5	11.1	1.3	1
HAY AND DRY COARSE FODDER.							
Corn fodder,* field cured:							
Minimum, .....	22.9	1.5	2.7	7.5	20.6	0.6	.....
Maximum, .....	60.2	5.5	6.9	24.7	47.8	2.5	.....
Average, .....	42.2	2.7	4.5	14.3	34.7	1.6	35
Corn leaves, field cured:							
Minimum, .....	14.8	4.3	4.5	17.4	27.3	0.8	.....
Maximum, .....	44.0	7.4	8.3	27.4	41.4	2.2	.....
Average, .....	30.0	5.5	6.0	21.4	35.7	1.4	17
Corn husks, field cured:							
Minimum, .....	26.7	0.6	1.3	6.8	14.3	0.5	.....
Maximum, .....	76.6	2.3	3.2	23.6	43.6	1.0	.....
Average, .....	50.9	1.8	2.5	15.8	28.3	0.7	18
Corn stalks, field cured:							
Minimum, .....	51.3	0.6	1.2	6.9	11.2	0.3	.....
Maximum, .....	78.5	2.0	3.0	16.8	26.0	1.0	.....
Average, .....	68.4	1.2	1.9	11.0	17.0	0.5	15
Corn stover, † field cured:							
Minimum, .....	15.4	1.7	1.9	14.1	23.3	0.7	.....
Maximum, .....	57.4	7.0	8.3	32.2	53.3	2.2	.....
Average, .....	40.5	3.4	3.8	19.7	31.5	1.1	60
Hay from:							
Redtop,‡ cut at different stages—							
Minimum, .....	6.8	3.8	5.9	24.0	44.8	1.4	.....
Maximum, .....	11.6	7.0	10.4	31.8	50.4	3.2	.....
Average, .....	8.9	5.2	7.9	28.6	47.5	1.9	9
Redtop, cut in bloom—							
Minimum, .....	6.8	4.8	7.8	24.0	46.8	1.5	.....
Maximum, .....	11.6	6.5	10.4	31.8	47.8	2.3	.....
Average, .....	8.7	4.9	8.0	29.9	46.4	2.1	3
Orchard grass—							
Minimum, .....	6.5	5.0	6.6	28.9	32.9	1.7	.....
Maximum, .....	13.6	7.9	10.4	38.3	48.6	3.3	.....
Average, .....	9.9	6.0	8.1	32.4	41.0	2.6	10
Timothy,§ all analyses—							
Minimum, .....	6.1	2.5	3.8	22.3	34.3	1.0	.....
Maximum, .....	28.9	6.3	9.8	38.5	58.5	4.0	.....
Average, .....	13.2	4.4	5.9	29.0	45.0	2.5	68
Timothy, cut in full bloom—							
Minimum, .....	7.0	2.5	5.0	22.2	34.4	2.0	.....
Maximum, .....	28.9	6.0	7.5	37.1	48.5	4.0	.....
Average, .....	15.0	4.5	6.0	29.6	41.9	3.0	11

\*Entire plant.

†What is left after the ears are harvested.

‡Herd's grass of Pennsylvania.

§Herd's grass of New England and New York

## Composition of Feeding Stuffs.—Continued.

	Water.	Ash.	Protein.	Fiber.	Nitrogen-free extract.	Fat.	Number of analyses.
HAY AND DRY COARSE FODDER—Continued.							
Hay from:	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	
Timothy, cut soon after bloom—							
Minimum, .....	7.8	3.5	4.6	25.7	37.0	1.7	.....
Maximum, .....	21.6	5.4	8.1	33.4	51.0	3.6	.....
Average, .....	14.2	4.4	5.7	28.1	44.6	3.0	11
Timothy, cut when nearly ripe—							
Minimum, .....	7.0	2.7	4.3	24.8	38.0	1.0	.....
Maximum, .....	22.7	5.1	6.0	38.5	49.1	2.8	.....
Average, .....	14.1	3.9	5.0	31.1	43.7	2.2	12
Minimum, .....	14.3	4.5	5.3	17.7	31.8	2.0	.....
Maximum, .....	32.8	7.8	12.9	26.8	51.1	4.2	.....
Average, .....	21.2	6.3	7.8	23.0	37.8	3.9	10
Cut, when seed was in milk—							
Minimum, .....	22.5	5.6	6.0	23.9	33.2	3.4	.....
Maximum, .....	26.5	7.6	6.6	24.9	35.4	4.1	.....
Average, .....	24.4	7.0	6.2	24.5	24.2	3.6	4
Cut, when seed was ripe—							
Minimum, .....	23.7	5.1	5.3	20.4	33.6	2.8	.....
Maximum, .....	32.8	7.8	6.0	25.7	33.7	3.2	.....
Average, .....	27.8	6.4	5.8	23.8	33.2	3.0	4
Hungarian grass—							
Minimum, .....	4.9	5.0	4.7	23.6	44.4	1.5	.....
Maximum, .....	9.5	7.5	13.3	36.3	53.0	3.5	.....
Average, .....	7.7	6.0	7.5	27.7	49.0	2.1	18
Meadow fescue—							
Minimum, .....	7.4	5.5	4.5	20.8	28.5	1.6	.....
Maximum, .....	32.5	7.8	11.8	31.9	45.5	3.5	.....
Average, .....	20.0	6.8	7.0	25.9	38.4	2.7	9
Italian rye grass—							
Minimum, .....	7.4	6.1	5.7	28.4	39.6	1.3	.....
Maximum, .....	9.3	7.9	8.8	33.9	48.9	1.9	.....
Average, .....	8.5	6.9	7.5	30.5	45.0	1.7	4
Mixed grasses—							
Minimum, .....	6.5	2.1	4.8	21.0	33.4	1.3	.....
Maximum, .....	33.4	6.9	12.1	38.4	50.8	4.9	.....
Average, .....	15.3	5.5	7.4	27.2	41.1	2.5	126
Hay from:							
Rowen (mixed)*—							
Minimum, .....	8.2	5.1	9.6	20.1	33.6	2.2	.....
Maximum, .....	24.4	7.2	14.8	20.0	44.3	4.5	.....
Average, .....	16.6	6.8	11.6	22.5	39.4	3.1	23
Mixed grasses and clovers—							
Minimum, .....	8.2	3.9	5.5	19.7	31.8	1.5	.....
Maximum, .....	15.9	9.6	14.4	35.1	48.9	3.1	.....
Average, .....	12.9	5.5	10.1	27.6	41.3	2.6	17
Swamp hay—							
Minimum, .....	7.8	3.3	5.0	19.4	39.9	0.8	.....
Maximum, .....	17.9	12.1	8.8	31.6	51.7	3.6	.....
Average, .....	11.6	6.7	7.2	26.6	45.9	2.0	8
Salt marsh—							
Minimum, .....	7.8	5.4	4.0	25.1	34.1	1.6	.....
Maximum, .....	18.6	11.8	7.8	33.8	54.3	3.1	.....
Average, .....	10.4	7.7	5.5	30.0	44.1	2.4	10

\*Second cut.

## Composition of Feeding Stuffs.—Continued.

	Water.	Ash.	Protein.	Fiber.	Nitrogen-free extract.	Fat.	Number of analyses.
HAY AND DRY COARSE FODDER—Continued.							
Red clover—	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	
Minimum, .....	6.0	3.9	10.0	15.6	27.3	1.5	.....
Maximum, .....	31.3	8.3	20.2	35.7	52.2	5.9	.....
Average, .....	15.3	6.2	12.3	24.8	38.1	3.3	38
Red clover in bloom—							
Minimum, .....	6.0	5.6	10.8	17.9	27.3	2.5	.....
Maximum, .....	31.3	8.3	15.4	28.1	41.3	5.9	.....
Average, .....	20.8	6.6	12.4	21.9	33.8	4.5	6
Alsike clover—							
Minimum, .....	5.3	6.1	9.2	19.7	35.6	1.6	.....
Maximum, .....	13.9	12.3	16.1	29.5	45.9	4.2	.....
Average, .....	9.7	8.3	12.8	25.6	40.7	2.9	9
White clover—							
Minimum, .....	6.1	4.5	13.9	20.3	33.4	1.7	.....
Maximum, .....	13.5	13.8	20.0	30.3	47.2	5.8	.....
Average, .....	9.7	8.3	15.7	24.1	39.3	2.9	7
Crimson clover—							
Minimum, .....	5.9	7.4	13.6	20.1	29.3	1.5	.....
Maximum, .....	13.4	13.0	16.1	34.9	42.6	4.8	.....
Average, .....	9.6	8.6	15.2	27.2	36.6	2.8	7
Japan clover—							
Average, .....	11.0	8.5	13.8	24.0	39.0	3.7	2
Vetch—							
Minimum, .....	8.3	7.1	13.1	19.7	26.5	1.6	.....
Maximum, .....	15.8	11.6	23.1	28.1	40.2	3.0	.....
Average, .....	11.3	7.9	17.0	25.4	36.1	2.3	5
Serradella—							
Minimum, .....	7.2	5.4	13.9	19.4	40.5	2.2	.....
Maximum, .....	11.7	10.3	16.6	22.9	46.0	2.9	.....
Average, .....	9.2	7.2	15.2	21.6	44.2	2.6	2
Alfalfa*—							
Minimum, .....	4.6	3.1	10.2	14.0	35.1	1.1	.....
Maximum, .....	16.0	10.4	23.3	33.0	53.6	3.8	.....
Average, .....	8.4	7.4	14.3	25.0	42.7	2.2	21
Cowpea—							
Minimum, .....	7.6	3.2	13.6	16.4	39.4	1.1	.....
Maximum, .....	14.0	10.2	20.3	25.0	49.5	3.7	.....
Average, .....	10.7	7.5	16.6	20.1	42.2	2.2	8
Soja bean—							
Minimum, .....	6.1	4.8	14.0	17.3	31.8	2.4	.....
Maximum, .....	20.1	8.9	18.1	32.3	41.0	7.5	.....
Average, .....	11.3	7.2	15.4	22.3	38.6	5.2	6
Flat pea ( <i>Lathyrus sylvestris</i> )—							
Minimum, .....	6.3	6.5	17.6	18.5	27.7	1.6	.....
Maximum, .....	10.0	8.6	27.9	32.7	34.0	4.6	.....
Average, .....	8.4	7.9	22.9	26.2	31.4	3.2	5
Peanut vines (without nuts)—							
Minimum, .....	6.3	7.3	9.1	18.3	33.1	1.7	.....
Maximum, .....	7.8	15.7	11.7	33.3	50.4	5.8	.....
Average, .....	7.6	10.8	10.7	23.6	42.7	4.6	6
Soja bean straw:							
Minimum, .....	5.7	3.9	4.0	34.0	35.3	0.8	.....
Maximum, .....	14.0	4.9	4.9	49.6	43.3	3.2	.....
Average, .....	10.1	5.8	4.6	40.4	37.4	1.7	4

\*Lucern.



## Composition of Feeding Stuffs.—Continued.

	Water.	Ash.	Protein.	Fiber.	Nitrogen-free extract.	Fat.	Number of analyses.
<b>HAY AND DRY COARSE FODDER—Continued.</b>							
Horsebean straw:	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	
Average, .....	9.2	8.7	8.8	37.6	34.3	1.4	1
Wheat straw:							
Minimum, .....	6.5	3.0	2.9	34.3	31.0	0.8	.....
Maximum, .....	17.9	7.0	5.0	42.7	50.6	1.8	.....
Average, .....	9.6	4.2	3.4	38.1	43.4	1.3	7
Rye straw:							
Minimum, .....	6.3	2.8	2.2	32.7	41.0	1.0	.....
Maximum, .....	9.7	3.4	3.6	43.3	52.9	1.6	.....
Average, .....	7.1	3.2	3.0	38.9	46.6	1.2	7
Oat straw:							
Minimum, .....	6.5	3.7	2.7	31.8	33.5	1.7	.....
Maximum, .....	11.4	6.7	6.9	45.1	46.6	3.2	.....
Average, .....	9.2	5.1	4.0	37.0	42.4	2.3	12
Buckwheat straw:							
Minimum, .....	9.0	4.9	3.3	37.2	32.1	0.7	.....
Maximum, .....	10.4	6.5	7.8	46.8	38.9	1.7	.....
Average, .....	9.9	5.5	5.2	43.0	35.1	1.3	3
<b>ROOTS AND TUBERS.</b>							
Potatoes:							
Minimum, .....	75.4	0.8	1.1	0.3	14.1	.....	.....
Maximum, .....	82.2	1.2	3.0	0.9	20.4	0.1	.....
Average, .....	78.9	1.0	2.1	0.6	17.3	0.1	12
Sweet potatoes:							
Minimum, .....	66.0	0.7	0.5	0.6	18.0	0.3	.....
Maximum, .....	74.4	1.3	3.6	2.5	29.7	0.6	.....
Average, .....	71.1	1.0	1.5	1.3	24.7	0.4	6
Red beets:							
Minimum, .....	85.8	0.7	1.1	0.6	3.8	0.1	.....
Maximum, .....	92.2	1.6	1.8	1.7	11.3	0.3	.....
Average, .....	88.5	1.0	1.5	0.9	8.0	0.1	9
Sugar beets:							
Minimum, .....	85.0	0.4	1.1	0.6	5.7	0.1	.....
Maximum, .....	90.8	1.2	3.2	1.3	13.6	0.2	.....
Average, .....	86.5	0.9	1.8	0.9	9.8	0.1	19
Mangel-wurzels:							
Minimum, .....	36.9	0.8	1.0	0.6	2.4	0.1	.....
Maximum, .....	94.4	1.4	1.9	1.3	8.7	0.5	.....
Average, .....	90.9	1.1	1.4	0.9	5.5	0.2	9
Turnips:							
Minimum, .....	87.2	0.7	0.8	0.8	4.2	0.1	.....
Maximum, .....	92.4	1.0	1.4	1.4	8.8	0.2	.....
Average, .....	90.5	0.8	1.1	1.2	6.2	0.2	3
Rutabagas:							
Minimum, .....	87.1	1.0	1.0	1.1	5.1	0.1	.....
Maximum, .....	91.8	1.4	1.3	1.4	9.1	0.3	.....
Average, .....	88.6	1.2	1.2	1.3	7.5	0.2	4
Carrots:							
Minimum, .....	86.5	1.6	0.8	0.9	5.1	0.2	.....
Maximum, .....	91.1	1.3	2.0	2.3	10.4	0.7	.....
Average, .....	88.6	1.0	1.1	1.3	7.6	0.4	8
Artichokes:							
Average, .....	79.5	1.0	2.6	0.8	15.9	0.2	2

## Composition of Feeding Stuffs.—Continued.

	Water.	Ash.	Protein.	Fiber.	Nitrogen-free extract.	Fat.	Number of analyses.
GRAINS AND OTHER SEEDS.							
Corn kernels:	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	
Dent, all analyses—							
Minimum, .....	6.2	1.0	7.5	0.9	65.9	3.1	.....
Maximum, .....	19.4	2.6	11.8	4.8	75.7	7.5	.....
Average, .....	10.6	1.5	10.3	2.2	70.4	5.0	88
Flint, all analyses—							
Minimum, .....	4.5	1.0	7.0	0.7	65.0	3.4	.....
Maximum, .....	19.6	1.9	13.7	2.9	76.7	7.1	.....
Average, .....	11.3	1.4	10.5	1.7	70.1	5.0	68
Sweet, all analyses—							
Minimum, .....	6.0	1.4	9.5	1.5	61.8	3.8	.....
Maximum, .....	10.9	2.4	15.3	5.2	72.4	9.3	.....
Average, .....	8.8	1.9	11.6	2.8	66.8	8.1	28
Pop varieties—							
Minimum, .....	8.6	1.2	9.7	1.2	68.4	4.2	.....
Maximum, .....	11.8	1.7	13.1	2.3	71.1	6.0	.....
Average, .....	10.7	1.5	11.2	1.8	69.6	5.2	4
Soft varieties—							
Minimum, .....	6.1	1.4	8.8	1.3	66.0	5.0	.....
Maximum, .....	14.1	1.9	14.4	3.3	75.5	5.7	.....
Average, .....	9.3	1.0	11.4	2.0	70.2	5.5	5
All varieties and analyses—							
Minimum, .....	4.5	1.0	7.0	0.7	61.8	3.1	.....
Maximum, .....	20.7	2.6	15.3	5.2	76.7	9.3	.....
Average, .....	10.9	1.5	10.5	2.1	69.6	5.4	208
Sorghum seed:							
Minimum, .....	9.3	1.4	7.7	1.4	59.0	2.1	.....
Maximum, .....	16.8	4.0	11.3	8.7	73.6	4.6	.....
Average, .....	12.8	2.1	9.1	2.4	69.8	3.6	10
Barley:							
Minimum, .....	7.2	1.8	8.6	1.8	66.7	1.5	.....
Maximum, .....	12.6	3.2	15.7	4.2	73.9	3.2	.....
Average, .....	10.9	2.4	12.4	2.7	69.8	1.8	10
Oats:							
Minimum, .....	8.9	2.0	8.0	1.5	53.5	3.4	.....
Maximum, .....	13.5	4.0	14.4	12.3	66.9	5.8	.....
Average, .....	11.0	3.0	11.8	9.5	59.7	5.0	30
Rye:							
Minimum, .....	8.7	1.8	9.5	1.4	71.2	1.4	.....
Maximum, .....	13.2	1.9	12.1	2.1	73.4	2.1	.....
Average, .....	11.6	1.9	10.6	1.7	72.0	1.7	6
Wheat, spring varieties:							
Minimum, .....	8.1	1.5	8.4	1.3	66.1	1.8	.....
Maximum, .....	13.4	2.6	15.4	2.2	74.9	2.6	.....
Average, .....	10.4	1.9	12.5	1.8	71.2	2.2	18
Wheat, winter varieties, all analyses:							
Minimum, .....	7.1	0.8	8.1	0.4	66.7	1.3	.....
Maximum, .....	14.0	3.6	16.6	2.9	77.7	3.9	.....
Average, .....	10.5	1.8	11.8	1.8	72.0	2.1	262
Wheat, all varieties:							
Minimum, .....	7.1	0.8	8.1	0.4	64.8	1.3	.....
Maximum, .....	14.0	3.6	17.2	3.1	77.7	1.3	.....
Average, .....	10.5	1.8	11.9	1.8	71.9	2.1	310
Rice:							
Minimum, .....	11.4	0.3	5.9	0.1	77.5	0.3	.....
Maximum, .....	14.0	0.5	8.6	0.4	80.6	0.6	.....
Average, .....	12.4	0.4	7.4	0.2	79.2	0.4	10

## Composition of Feeding Stuffs.—Continued.

	Water.	Ash.	Protein.	Fiber.	Nitrogen-free extract.	Fat.	Number of analyses.
GRAINS AND OTHER SEED—Continued.							
Buckwheat:	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	
Minimum, .....	10.9	1.6	8.6	7.8	62.6	2.2	.....
Maximum, .....	14.8	2.3	11.0	9.4	65.4	2.4	.....
Average, .....	12.6	2.3	10.0	8.7	64.5	2.2	8
Sunflower seed (whole):							
Minimum, .....	8.5	2.1	15.8	29.5	22.0	20.9	.....
Maximum, .....	8.8	3.2	16.7	30.3	27.7	21.5	.....
Average, .....	8.6	2.6	16.3	29.9	21.4	21.2	2
Cotton seed, whole (with hulls):							
Minimum, .....	7.0	2.9	14.5	20.3	17.3	18.9	.....
Maximum, .....	17.5	4.5	21.7	28.7	29.1	21.6	.....
Average, .....	10.3	3.5	18.4	23.2	24.7	19.9	5
Cotton seed kernels (without hulls):							
Minimum, .....	6.0	4.0	29.3	3.1	15.8	36.5	.....
Maximum, .....	6.3	5.4	33.1	4.4	19.5	36.6	.....
Average, .....	6.2	4.7	31.2	3.7	17.6	36.6	2
Cotton seed, whole, (roasted):							
Minimum, .....	2.9	2.3	16.1	16.8	21.1	22.5	.....
Maximum, .....	9.3	8.7	17.6	24.0	25.8	32.7	.....
Average, .....	6.1	5.5	16.8	20.4	23.5	27.7	2
Peanut kernels (without hulls):							
Minimum, .....	4.9	1.9	23.2	2.0	12.7	35.0	.....
Maximum, .....	13.2	3.8	31.4	18.4	19.1	47.4	.....
Average, .....	7.5	2.4	27.9	7.0	15.6	39.6	7
Horse bean, .....	11.3	3.8	26.6	7.2	50.1	1.0	1
Soja bean:							
Minimum, .....	5.9	3.1	26.3	3.4	26.2	12.3	.....
Maximum, .....	19.3	5.4	40.2	6.1	32.8	19.0	.....
Average, .....	10.8	4.7	34.0	4.8	28.8	16.9	8
Cowpea:							
Minimum, .....	10.0	2.9	19.3	2.5	50.5	1.3	.....
Maximum, .....	20.9	3.4	23.4	5.0	62.0	1.6	.....
Average, .....	14.8	3.2	20.8	4.1	55.7	1.4	5
MILL PRODUCTS.							
Corn meal:							
Minimum, .....	8.0	0.9	7.1	0.5	60.4	2.0	.....
Maximum, .....	27.4	4.1	13.9	3.1	74.0	5.1	.....
Average, .....	15.0	1.4	9.2	1.9	68.7	3.8	77
Corn and cob meal:							
Minimum, .....	9.5	1.2	5.8	4.7	56.8	2.5	.....
Maximum, .....	26.3	1.9	12.2	9.4	60.7	4.7	.....
Average, .....	15.1	1.5	8.5	6.6	64.8	3.5	7
Oat meal:							
Minimum, .....	6.2	1.8	12.9	0.6	66.6	6.1	.....
Maximum, .....	8.8	2.2	16.3	1.2	69.0	8.8	.....
Average, .....	7.9	8.0	14.7	0.9	67.4	7.1	6
Barley meal:							
Minimum, .....	9.9	1.6	9.8	5.9	63.5	1.5	.....
Maximum, .....	13.6	3.8	12.7	7.0	68.0	3.2	.....
Average, .....	11.9	2.6	10.5	6.5	66.3	2.2	3
Rye flour:							
Minimum, .....	12.4	0.6	0.4	6.0	77.6	0.8	.....
Maximum, .....	13.6	0.8	6.9	0.5	79.1	0.9	.....
Average, .....	13.1	0.7	6.7	0.4	78.3	0.8	4

## Composition of Feeding Stuffs.—Continued.

	Water.	Ash.	Protein.	Fiber.	Nitrogen-free extract.	Fat.	Number of analyses.
MILL PRODUCTS—Continued.							
Wheat flour, all analyses:	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	
Minimum, .....	8.2	0.3	8.6	0.1	71.5	0.6	.....
Maximum, .....	13.6	0.7	13.6	1.0	78.5	1.8	.....
Average, .....	12.4	0.5	10.8	0.2	75.0	1.1	20
Buckwheat flour:							
Minimum, .....	12.8	0.7	4.2	0.2	71.1	0.7	.....
Maximum, .....	17.6	1.3	8.1	0.5	79.4	1.8	.....
Average, .....	14.6	1.0	6.9	0.3	75.8	1.4	4
Ground linseed:							
Minimum, .....	7.9	3.4	20.3	5.0	25.5	30.3	.....
Maximum, .....	8.3	6.1	23.0	6.9	30.2	30.5	.....
Average, .....	8.1	4.7	21.6	7.3	27.9	30.4	2
Pea meal:							
Minimum, .....	8.9	2.6	19.1	17.1	50.2	0.9	.....
Maximum, .....	12.1	2.7	21.4	17.7	52.0	1.5	.....
Average, .....	10.5	2.6	20.2	14.4	15.1	1.2	2
Sojabean meal, .....	10.8	45.5	36.7	4.5	27.3	16.2	1
Ground corn and oats, equal parts:							
Minimum, .....	10.7	1.9	8.4	.....	*70.4	4.0	.....
Maximum, .....	13.1	2.7	10.4	.....	*73.4	5.0	.....
Average, .....	11.9	2.2	9.6	.....	*72.0	4.4	6
WASTE PRODUCTS.							
Corn-cob:							
Minimum, .....	7.2	0.7	1.2	18.2	43.8	0.1	.....
Maximum, .....	24.8	2.7	3.7	33.3	66.7	0.9	.....
Average, .....	10.7	1.4	2.4	30.1	54.9	0.5	18
Hominy chops:							
Minimum, .....	8.1	1.9	7.9	2.5	61.0	4.5	.....
Maximum, .....	13.5	3.1	11.2	6.7	71.1	11.2	.....
Average, .....	11.1	2.5	9.8	3.8	64.5	8.3	12
Corn-germ:							
Minimum, .....	9.4	1.9	9.7	1.9	61.9	5.2	.....
Maximum, .....	13.0	7.4	9.9	5.8	67.4	11.2	.....
Average, .....	10.7	4.0	9.8	4.1	64.0	7.4	3
Corn-germ meal:							
Minimum, .....	6.5	0.8	10.0	7.8	57.4	4.3	.....
Maximum, .....	9.9	2.6	14.0	13.0	67.0	11.2	.....
Average, .....	8.1	1.3	11.1	9.9	62.5	7.1	6
Gluten meal:							
Minimum, .....	6.2	0.5	21.3	0.3	34.0	3.4	.....
Maximum, .....	12.3	2.0	39.2	7.8	58.5	20.0	.....
Average, .....	8.8	0.8	29.7	2.2	49.8	8.7	54
Recent analyses—							
Minimum, .....	6.2	0.5	21.4	0.6	34.0	6.6	.....
Maximum, .....	11.1	2.0	39.3	7.8	58.4	20.0	.....
Average, .....	8.2	0.9	29.3	3.3	46.5	11.8	20
Chicago†—							
Average, .....	10.1	1.1	30.1	1.6	48.7	8.4	6
Buffalo†—							
Average, .....	8.2	0.8	23.3	6.1	50.4	11.2	5
Cream gluten:							
Minimum, .....	7.7	0.6	34.1	1.2	35.0	13.6	.....
Maximum, .....	9.0	0.8	38.2	1.3	41.1	15.8	.....
Average, .....	8.1	0.7	36.1	1.3	39.0	14.8	2

\*Including fiber.

†Included in above average.

## Composition of Feeding Stuffs.—Continued.

	Water.	Ash.	Protein.	Fiber.	Nitrogen-free extract.	Fat.	Number of analyses.
WASTE PRODUCTS—Continued.							
Gluten feed:	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	
Minimum, .....	6.3	0.7	19.5	1.5	44.5	7.0	.....
Maximum, .....	9.0	1.8	28.3	8.2	58.0	12.6	.....
Average, .....	7.8	1.1	24.0	5.3	41.2	10.6	11
Buffalo†—							
Average, .....	7.7	1.1	25.0	5.3	49.3	11.6	5
Pope's, .....	14.0	0.6	33.3	1.6	36.5	14.1	1
Peoria,† .....	7.5	0.8	19.8	8.2	51.1	12.6	1
Chicago maize feed:							
Minimum, .....	8.6	0.7	19.3	6.8	49.2	5.6	.....
Maximum, .....	9.7	1.1	26.9	8.7	56.1	7.9	.....
Average, .....	9.1	0.9	22.8	7.6	52.7	6.9	3
Glucose feed and glucose refuse:							
Average, .....	6.5	1.1	20.7	4.5	56.8	10.4	2
Dried starch feed and sugar feed:							
Minimum, .....	9.2	0.6	17.1	3.1	49.2	7.3	.....
Maximum, .....	11.7	1.2	22.1	5.6	59.6	11.1	.....
Average, .....	10.9	0.9	19.7	4.7	54.8	9.0	4
Starch feed, wet:							
Minimum, .....	62.3	0.1	3.6	1.6	18.7	1.3	.....
Maximum, .....	72.2	0.6	9.6	4.4	28.9	4.4	.....
Average, .....	65.4	0.3	6.1	3.1	22.0	3.1	12
Oat feed:							
Minimum, .....	6.4	3.2	12.6	3.7	56.2	6.1	.....
Maximum, .....	9.2	4.2	20.0	12.5	63.7	7.8	.....
Average, .....	7.7	3.7	16.0	6.1	59.4	7.1	4
Barley screenings:							
Minimum, .....	12.0	3.5	12.1	7.0	61.6	2.6	.....
Maximum, .....	12.4	3.6	12.5	7.6	62.0	2.9	.....
Average, .....	12.2	3.6	12.3	7.3	61.8	2.8	2
Malt sprouts:							
Minimum, .....	7.3	3.8	21.0	9.3	45.5	1.0	.....
Maximum, .....	12.0	6.7	25.9	12.0	50.3	3.0	.....
Average, .....	10.2	5.7	23.2	10.7	48.5	1.7	4
Brewers' grains, wet:							
Minimum, .....	68.6	0.3	4.3	3.1	9.6	0.8	.....
Maximum, .....	79.4	1.5	6.9	5.6	15.9	2.8	.....
Average, .....	75.7	1.0	5.4	3.8	12.5	1.6	15
Brewers' grains, dried:							
Minimum, .....	6.2	3.3	19.3	10.2	46.1	4.2	.....
Maximum, .....	11.9	3.8	20.3	11.6	56.8	6.5	.....
Average, .....	8.2	3.6	19.9	11.0	51.7	5.6	3
Grano gluten, .....	5.8	2.8	31.1	12.0	33.4	14.9	1
Rye bran:							
Minimum, .....	8.2	2.9	11.5	2.5	59.8	1.7	.....
Maximum, .....	13.7	4.5	16.8	4.1	67.6	4.9	.....
Average, .....	11.6	3.6	14.7	3.5	63.8	2.8	7
Wheat bran from spring wheat:							
Minimum, .....	7.4	4.0	14.3	5.4	51.7	3.6	.....
Maximum, .....	13.6	6.0	18.1	10.1	58.1	5.0	.....
Average, .....	11.5	5.4	16.1	8.0	54.5	4.5	10
Wheat bran from winter wheat:							
Minimum, .....	10.6	5.0	13.9	7.2	50.5	3.5	.....
Maximum, .....	13.6	6.4	17.8	8.9	56.2	4.5	.....
Average, .....	12.3	5.9	16.0	8.1	53.7	4.0	7

†Included in above average.



## Composition of Feeding Stuffs.—Continued.

	Water.	Ash.	Protein.	Fiber.	Nitrogen-free extract.	Fat.	Number of analyses.
WASTE PRODUCTS—Continued.							
Wheat bran, all analyses:	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	
Minimum, .....	7.4	2.5	12.1	2.4	45.5	1.5	.....
Maximum, .....	15.8	7.8	18.9	15.5	63.2	7.0	.....
Average, ..	11.9	5.8	15.4	9.0	53.9	4.0	88
Wheat middlings:							
Minimum, .....	9.2	1.4	10.1	1.3	53.0	2.1	.....
Maximum, .....	16.0	6.3	20.0	12.7	70.9	5.9	.....
Average, .....	12.1	3.3	15.6	4.6	60.4	4.0	32
Wheat shorts:							
Minimum, .....	4.1	2.0	11.1	6.0	50.0	2.5	.....
Maximum, .....	15.5	6.2	19.4	10.5	67.0	6.1	.....
Average, .....	11.8	4.6	14.9	7.4	56.8	4.5	12
Wheat screenings:							
Minimum, .....	7.8	1.9	8.3	1.7	61.0	2.7	.....
Maximum, .....	13.6	3.8	16.9	7.5	70.4	3.3	.....
Average, .....	11.6	2.9	12.5	4.9	65.1	3.0	10
Rice bran:							
Minimum, .....	8.8	8.4	10.9	2.0	41.9	5.2	.....
Maximum, .....	10.7	12.4	13.6	17.8	62.3	10.9	.....
Average, .....	9.7	10.0	12.1	9.5	49.9	8.8	5
Rice hulls:							
Minimum, .....	7.7	10.5	2.9	30.3	36.0	0.6	.....
Maximum, .....	8.5	15.1	4.7	38.6	41.6	0.9	.....
Average, .....	8.2	13.2	3.6	35.7	38.6	0.7	3
Rice polish:							
Minimum, .....	9.0	2.8	10.9	2.4	45.5	6.5	.....
Maximum, .....	11.2	11.3	12.9	14.5	63.3	8.0	.....
Average, .....	10.0	6.7	11.7	6.3	58.0	7.3	4
Buckwheat middlings:							
Minimum, .....	9.5	4.4	25.1	2.4	36.3	5.7	.....
Maximum, .....	16.3	5.5	31.3	5.7	52.7	8.1	.....
Average, .....	13.2	4.8	28.9	4.1	41.9	7.1	.....
Cotton seed meal:							
Minimum, .....	5.8	5.7	23.3	1.3	15.7	8.8	.....
Maximum, .....	18.5	8.8	50.8	10.1	38.7	18.0	.....
Average, .....	8.2	7.2	42.3	5.6	23.6	13.1	35
Cotton seed hulls:							
Minimum, .....	9.2	1.8	2.2	37.9	12.4	0.6	.....
Maximum, .....	16.7	4.4	5.4	67.0	41.8	5.4	.....
Average, .....	11.1	2.8	4.2	46.3	33.4	2.2	20
Linseed meal, old process:							
Minimum, .....	5.6	4.6	27.7	4.7	28.4	5.2	.....
Maximum, .....	12.4	8.2	38.2	12.9	41.9	11.6	.....
Average, .....	9.2	5.7	32.9	8.9	35.4	7.9	21
Linseed meal, new process:							
Minimum, .....	6.0	5.0	27.1	7.6	35.2	1.3	.....
Maximum, .....	13.4	6.9	38.4	4.0	48.0	4.4	.....
Average, .....	10.1	5.8	38.2	9.5	38.4	3.0	14
Peanut meal:*							
Minimum, .....	6.6	3.7	37.5	2.5	28.5	5.8	.....
Maximum, .....	15.4	5.5	52.4	7.4	30.8	17.5	.....
Average, .....	10.7	4.9	47.6	5.1	23.7	8.0	2,480
Peanut hulls:							
Minimum, .....	7.8	1.9	4.6	56.5	9.7	0.9	.....
Maximum, .....	10.8	4.6	8.6	72.3	18.9	2.0	.....
Average, .....	9.0	3.4	6.6	64.3	15.1	1.6	5

\*Mostly European analyses.

## Composition of Feeding Stuffs.—Continued.

	Water.	Ash.	Protein.	Fiber.	Nitrogen-free extract.	Fat.	Number of analyses.
MILK AND ITS BY-PRODUCTS.							
Whole milk:	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	
Minimum, .....	80.3	0.4	2.1	.....	2.1	1.7	.....
Maximum, .....	90.7	1.2	6.4	.....	6.1	6.5	.....
Average, .....	87.2	0.7	3.6	.....	4.9	3.7	798
Skim milk, cream raised by setting:							
Minimum, .....	88.3	0.5	2.6	.....	3.8	0.2	.....
Maximum, .....	92.6	1.0	3.9	.....	5.5	2.5	.....
Average, .....	90.4	0.7	3.3	.....	4.7	0.9	96
Skim milk, cream raised by separator:							
Minimum, .....	89.8	.....	.....	.....	.....	.....	.....
Maximum, .....	91.2	.....	.....	.....	.....	.....	.....
Average, .....	90.6	0.7	3.1	.....	5.3	0.3	7
Butter milk:							
Minimum, .....	82.2	0.4	1.7	.....	2.5	.....	.....
Maximum, .....	93.3	0.9	6.2	.....	5.6	5.4	.....
Average, .....	90.1	0.7	4.0	.....	4.0	1.1	85
Whey:							
Minimum, .....	93.2	0.3	0.3	.....	4.4	0.0	.....
Maximum, .....	94.6	0.6	1.2	.....	5.8	0.2	.....
Average, .....	93.8	0.4	0.6	.....	5.1	0.1	46



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## TABLE No. II.

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Showing the pounds of total dry matter, total organic matter  
and digestible ingredients in varying weights of Fodders  
and Feeds, from Bulletin No. 81, of the Vermont  
Agricultural Experiment Station.

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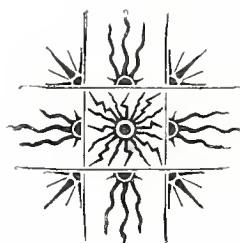




TABLE II.—POUNDS OF TOTAL DRY MATTER, TOTAL ORGANIC MATTER AND DIGESTIBLE INGREDIENTS (PROTEIN AND CARBOHYDRATES [INCLUDING ETHER EXTRACT MULTIPLIED BY 2.25]) IN VARYING WEIGHTS OF FODDERS AND FEEDS, BEING ESSENTIALLY A CONVENIENCE TABLE.

Pounds of Fodder.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.
Grasses.	Pasture grass, 1:4.8.				Timothy grass, 1:14.3.				Red top grass, 1:14.6.			
2½, .....	0.5	0.5	0.06	0.3	1.0	0.9	0.04	0.5	0.9	0.8	0.03	0.5
5, .....	1.0	0.9	0.12	0.6	1.9	1.8	0.08	1.1	1.7	1.6	0.07	1.0
10, .....	2.0	1.8	0.23	1.1	3.8	3.6	0.15	2.1	3.5	3.2	0.13	1.9
15, .....	3.0	2.7	0.35	1.7	5.8	5.4	0.23	3.2	5.2	4.9	0.20	2.9
20, .....	4.0	3.6	0.46	2.2	7.7	7.3	0.30	4.3	6.9	6.5	0.26	3.8
25, .....	5.0	4.5	0.58	2.8	9.6	9.1	0.38	5.4	8.7	8.1	0.33	4.8
30, .....	6.0	5.4	0.69	3.3	11.5	10.9	0.45	6.4	10.4	9.7	0.39	5.7
35, .....	7.0	6.3	0.81	3.9	13.4	12.7	0.53	7.5	12.1	11.3	0.46	6.7
40, .....	8.0	7.2	0.92	4.4	15.4	14.5	0.60	8.6	13.9	13.0	0.52	7.6
Grasses.	Kentucky blue grass, 1:9.2.				Green rowen, 1:5.1.				Green fodder corn, 1:11.7.			
2½, .....	0.9	0.8	0.05	0.5	0.7	0.7	0.08	0.4	0.5	0.5	0.03	0.3
5, .....	1.8	1.6	0.10	0.9	1.5	1.4	0.16	0.8	1.0	1.0	0.06	0.6
10, .....	3.5	3.2	0.20	1.8	3.0	2.8	0.32	1.6	2.1	2.0	0.11	1.3
15, .....	5.2	4.8	0.30	2.7	4.5	4.1	0.48	2.5	3.1	2.9	0.17	1.9
20, .....	7.0	6.4	0.40	3.7	6.0	5.5	0.64	3.3	4.1	2.9	0.22	2.6
25, .....	8.7	8.0	0.50	4.7	7.5	6.9	0.80	4.1	5.2	4.9	0.28	3.2
30, .....	10.5	9.6	0.60	5.5	9.0	8.3	0.96	4.9	6.2	5.9	0.33	3.9
35, .....	12.2	11.2	0.70	6.4	10.5	9.6	1.12	5.7	7.2	6.8	0.39	4.5
40, .....	14.0	12.8	0.80	7.3	12.0	11.0	1.28	6.6	8.3	7.8	0.44	5.2
Green fodders.	Sweet corn fodder, 1:11.3.				Green barley fodder, 1:5.7.				Green oat fodder, 1:8.7.			
2½, .....	0.5	0.5	0.03	0.3	0.6	0.6	0.06	0.3	0.9	0.9	0.06	0.5
5, .....	1.0	1.0	0.06	0.7	1.2	1.1	0.12	0.7	1.9	1.8	0.12	1.0
10, .....	2.1	2.0	0.12	1.4	2.5	2.3	0.24	1.4	3.8	3.5	0.24	2.1
15, .....	3.1	2.9	0.18	2.1	3.7	3.4	0.36	2.1	5.7	5.3	0.36	3.1
20, .....	4.2	3.9	0.24	2.7	5.0	4.6	0.48	2.7	7.6	7.1	0.48	4.2
25, .....	5.2	4.9	0.30	3.4	6.2	5.7	0.60	3.4	9.5	8.9	0.60	5.2
30, .....	6.3	5.9	0.36	4.1	7.4	6.8	0.72	4.1	11.3	10.6	0.72	6.2
35, .....	7.3	6.8	0.42	4.8	8.7	8.0	0.84	4.8	13.2	12.3	0.84	7.3
40, .....	8.4	7.8	0.48	5.4	9.9	9.1	0.96	5.4	15.1	14.1	0.96	8.3

TABLE II.—POUNDS OF TOTAL DRY MATTER, TOTAL ORGANIC MATTER AND DIGESTIBLE INGREDIENTS—  
*Continued.*

Pounds of Fodder.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.
Green fodders.	Green rye fodder, 1:7.2.				Green hungarian, 1:8.7.				Oats and peas, 1:4.2.			
2½, .....	0.6	0.5	0.05	0.4	0.7	0.7	0.05	0.4	0.5	0.5	0.07	0.3
5, .....	1.2	1.1	0.11	0.7	1.4	1.4	0.10	0.8	1.1	1.0	0.14	0.5
10, .....	2.3	2.2	0.21	1.5	2.9	2.7	0.20	1.7	2.1	2.0	0.27	1.1
15, .....	3.5	3.2	0.32	2.3	4.3	4.0	0.30	2.6	3.2	2.9	0.41	1.7
20, .....	4.7	4.3	0.42	3.0	5.8	5.4	0.40	3.5	4.3	3.9	0.54	2.3
25, .....	5.9	5.4	0.52	3.8	7.2	6.8	0.50	4.3	5.3	4.9	0.68	2.9
30, .....	7.0	6.5	0.63	4.5	8.7	8.2	0.60	5.2	6.4	5.9	0.81	3.4
35, .....	8.2	7.6	0.74	5.3	10.1	9.5	0.70	6.1	7.5	6.8	0.95	4.0
40, .....	9.4	8.6	0.84	6.0	11.6	10.9	0.80	6.9	8.5	7.8	1.08	4.6
Green fodders.	Barley and peas, 1:3.2.				Red clover (green), 1:5.7.				Alsike clover (green) 1:5.3.			
2½, .....	0.5	0.5	0.07	0.2	0.7	0.7	0.07	0.4	0.6	0.6	0.07	0.3
5, .....	1.0	0.9	0.14	0.4	1.5	1.4	0.15	0.8	1.3	1.2	0.13	0.7
10, .....	2.1	1.9	0.28	0.9	2.9	2.7	0.29	1.6	2.5	2.3	0.26	1.4
15, .....	3.1	2.8	0.42	1.4	4.4	4.0	0.44	2.5	3.8	3.5	0.39	2.1
20, .....	4.1	3.8	0.56	1.8	5.9	5.4	0.58	3.3	5.0	4.7	0.52	2.8
25, .....	5.2	4.7	0.70	2.3	7.3	6.8	0.73	4.1	6.3	5.9	0.65	3.5
30, .....	6.2	5.6	0.84	2.7	8.8	8.2	0.87	4.9	7.6	7.0	0.78	4.2
35, .....	7.2	6.6	0.98	3.2	10.2	9.5	1.02	5.7	8.8	8.1	0.91	4.9
40, .....	8.2	7.5	1.12	3.6	11.7	10.9	1.16	6.6	10.1	9.3	1.04	5.6
Green fodders and silages.	Green clover rowen 1:4.2.				Corn silage (mature), 1:14.8.				Corn silage (imma- ture), 1:14.8.			
2½, .....	0.6	0.6	0.07	0.3	0.7	0.6	0.03	0.4	0.5	0.5	0.02	0.3
5, .....	1.3	1.2	0.14	0.6	1.3	1.2	0.06	0.8	1.0	1.0	0.05	0.6
10, .....	2.5	2.3	0.29	1.2	2.6	2.5	0.12	1.8	2.1	2.0	0.09	1.3
15, .....	3.8	3.5	0.44	1.6	3.9	3.6	0.18	2.7	3.1	2.9	0.14	1.9
20, .....	5.0	4.6	0.58	2.4	5.3	4.9	0.24	3.6	4.2	3.9	0.18	2.6
25, .....	6.3	5.8	0.73	3.0	6.6	6.2	0.30	4.5	5.2	4.9	0.23	3.2
30, .....	7.5	6.9	0.87	3.6	7.9	7.4	0.36	5.3	6.3	5.9	0.27	3.9
35, .....	8.8	8.1	1.02	4.2	9.2	8.7	0.42	6.2	7.3	6.8	0.32	4.5
40, .....	10.0	9.2	1.16	4.8	10.5	9.9	0.48	7.1	8.4	7.8	0.36	5.2

TABLE II.—POUNDS OF TOTAL DRY MATTER, TOTAL ORGANIC MATTER AND DIGESTIBLE INGREDIENTS—  
*Continued.*

Pounds of Fodder.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.
Silages, etc.	Corn stover silage 1:16.6.				Clover silage, 1:4.7.				Potatoes, 1:17.2.			
2½, .....	0.5	0.4	0.02	0.3	0.7	0.6	0.07	0.3	0.5	0.5	0.02	0.4
5, .....	1.0	0.9	0.03	0.5	1.4	1.3	0.14	0.6	1.1	1.0	0.05	0.8
10, .....	1.9	1.8	0.06	1.0	2.8	2.5	0.27	1.3	2.1	2.0	0.09	1.6
15, .....	2.9	2.6	0.09	1.5	4.2	3.8	0.41	1.9	3.2	3.0	0.14	2.3
20, .....	3.9	3.5	0.12	2.0	5.6	5.1	0.54	2.6	4.2	4.0	0.18	3.1
25, .....	4.8	4.4	0.15	2.5	7.0	6.4	0.68	3.2	5.3	5.0	0.23	3.9
30, .....	5.8	5.3	0.18	3.0	8.4	7.6	0.81	3.9	6.3	6.0	0.27	4.7
35, .....	6.8	6.1	0.21	3.5	9.8	8.9	0.95	4.5	7.4	7.0	0.32	5.4
40, .....	7.7	7.0	0.24	4.0	11.2	10.2	1.08	5.1	8.4	8.0	0.36	6.2
Roots.	Beets, 1:6.5.				Sugar beets, 1:6.8.				Carrots, 1:9.6.			
2½, .....	0.3	0.3	0.04	0.2	0.3	0.3	0.04	0.3	0.3	0.3	0.03	0.2
5, .....	0.6	0.5	0.07	0.5	0.7	0.6	0.08	0.5	0.5	0.5	0.05	0.5
10, .....	1.2	1.1	0.14	0.9	1.4	1.3	0.16	1.1	1.1	1.0	0.10	0.1
15, .....	1.7	1.6	0.21	1.4	2.0	1.9	0.24	1.7	1.6	1.6	0.15	1.4
20, .....	2.3	2.1	0.28	1.8	2.7	2.5	0.32	2.2	2.3	2.1	0.20	1.9
25, .....	2.9	2.6	0.35	2.3	3.4	3.1	0.40	2.7	2.9	2.6	0.25	2.4
30, .....	3.5	3.1	0.42	2.7	4.1	3.8	0.48	3.3	3.4	3.1	0.30	2.9
35, .....	4.0	3.7	0.49	3.2	4.7	4.4	0.56	3.8	4.0	3.6	0.35	3.4
40, .....	4.6	4.2	0.56	3.6	5.4	5.0	0.64	4.4	4.6	4.2	0.40	3.8
Roots.	Mangel wurtzels, 1:4.9.				Rutabagas, 1:8.6.				Turnips, 1:7.7.			
2½, .....	0.2	0.2	0.03	0.1	0.3	0.2	0.03	0.2	0.2	0.2	0.03	0.2
5, .....	0.4	0.4	0.06	0.3	0.5	0.5	0.05	0.4	0.5	0.4	0.05	0.4
10, .....	0.9	0.8	0.11	0.5	1.1	1.0	0.10	0.9	1.0	0.9	0.10	0.8
15, .....	1.4	1.2	0.17	0.8	1.6	1.5	0.15	1.3	1.4	1.3	0.15	1.2
20, .....	1.8	1.6	0.22	1.1	2.3	2.0	0.20	1.7	1.9	1.7	0.20	1.5
25, .....	2.3	2.0	0.28	1.4	2.9	2.6	0.25	2.2	2.4	2.2	0.25	1.9
30, .....	2.7	2.4	0.33	1.6	3.4	3.1	0.30	2.6	2.9	2.6	0.30	2.3
35, .....	3.2	2.8	0.39	1.9	4.0	3.6	0.35	3.0	3.3	3.0	0.35	2.7
40, .....	3.6	3.2	0.44	2.2	4.6	4.1	0.40	3.4	3.8	3.5	0.40	3.1

TABLE II.—POUNDS OF TOTAL DRY MATTER, TOTAL ORGANIC MATTER AND DIGESTIBLE INGREDIENTS—  
*Continued.*

Pounds of Fodder.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.
Milk.	Skim milk, 1:2.0.				Butter milk, 1:1.7.				Whey, 1:8.7.			
2½, .....	0.2	0.2	0.07	0.1	0.2	0.2	0.10	0.2	0.2	0.1	0.02	0.1
5, .....	0.5	0.4	0.15	0.3	0.5	0.5	0.19	0.3	0.3	0.3	0.03	0.3
10, .....	0.9	0.9	0.29	0.6	1.0	0.9	0.38	0.6	0.6	0.6	0.06	0.5
15, .....	1.4	1.3	0.44	0.9	1.5	1.4	0.57	1.0	0.9	0.8	0.09	0.8
20, .....	1.9	1.7	0.58	1.2	2.0	1.8	0.76	1.3	1.2	1.2	0.12	1.0
25, .....	2.4	2.2	0.73	1.6	2.5	2.3	0.95	1.6	1.5	1.5	0.15	1.3
30, .....	2.8	2.6	0.87	1.8	3.0	2.8	1.14	1.9	1.9	1.8	0.18	1.6
35, .....	3.2	3.0	1.02	2.1	3.5	3.3	1.33	2.2	2.2	2.0	0.21	1.8
40, .....	3.7	3.5	1.16	2.4	4.0	3.7	1.52	2.6	2.5	2.3	0.24	2.1
Hays.	Mixed hay, 1:10.0.				Timothy hay, 1:16.5.				Red top hay, 1:10.3.			
2½, .....	2.1	2.0	0.11	1.1	2.2	2.1	0.07	1.2	2.3	2.1	0.12	1.2
5, .....	4.2	4.0	0.22	2.2	4.3	4.1	0.14	2.3	4.6	4.3	0.24	2.4
7½, .....	6.4	5.9	0.33	3.3	6.5	6.2	0.21	3.5	6.8	6.4	0.36	3.6
10, .....	8.5	7.9	0.44	4.4	8.7	8.2	0.28	4.6	9.1	8.6	0.48	4.9
12½, .....	10.6	9.9	0.55	5.5	10.9	10.3	0.35	5.8	11.4	10.7	0.60	6.2
15, .....	12.7	11.9	0.66	6.6	13.0	12.4	0.42	6.9	13.9	12.9	0.72	7.4
17½, .....	14.8	13.9	0.77	7.7	15.2	14.2	0.49	8.1	16.0	15.0	0.84	8.6
20, .....	16.9	15.8	0.88	8.8	17.4	16.5	0.56	9.2	18.2	17.2	0.96	9.8
25, .....	21.2	19.8	1.10	11.0	21.7	20.6	0.70	11.6	22.8	21.5	1.20	12.3
Hays.	Kentucky blue grass hay, 1:10.6.				Rowen hay (mixed), 1:5.6.				Rowen hay (fine), 1:4.7.			
2½, .....	1.9	1.7	0.09	1.0	2.1	1.9	0.20	1.1	2.2	2.0	0.24	1.1
5, .....	3.7	3.4	0.19	2.1	4.2	3.8	0.40	2.3	4.3	4.0	0.49	2.3
7½, .....	5.6	5.0	0.28	3.0	6.3	5.7	0.60	3.4	6.5	6.0	0.73	3.4
10, .....	7.4	6.7	0.37	3.9	8.3	7.7	0.80	4.5	8.7	8.0	0.97	4.6
12½, .....	9.2	8.4	0.46	4.9	10.4	9.5	1.00	5.6	10.9	10.0	1.21	5.7
15, .....	11.1	10.1	0.56	5.9	12.5	11.4	1.20	6.7	13.0	12.1	1.46	6.8
17½, .....	13.0	11.7	0.65	6.9	14.6	13.4	1.40	7.8	15.2	14.1	1.70	8.0
20, .....	14.8	13.4	0.74	7.9	16.7	15.3	1.60	8.9	17.4	16.1	1.94	9.1
25, .....	18.5	16.8	0.93	9.9	20.9	19.2	2.00	11.2	21.7	20.1	2.43	11.4

TABLE II.—POUNDS OF TOTAL DRY MATTER, TOTAL ORGANIC MATTER AND DIGESTIBLE INGREDIENTS—  
*Continued.*

Pounds of Fodder.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.
Dry fodders.	Corn fodder, 1:14.3.				Corn stover, 1:23.6.				Oat hay, 1:9.9.			
2½, .....	1.4	1.4	0.06	0.9	1.5	1.4	0.04	0.8	2.3	2.1	0.10	1.0
5, .....	2.9	2.8	0.13	1.8	3.0	2.8	0.07	1.7	4.6	4.2	0.21	2.0
7½, .....	4.3	4.1	0.19	2.7	4.5	4.2	0.11	2.5	6.8	6.4	0.31	3.0
10, .....	5.8	5.5	0.25	3.6	6.0	5.7	0.14	3.3	9.1	8.5	0.41	4.0
12½, .....	7.2	6.9	0.32	4.5	7.5	8.1	0.18	4.1	11.4	10.6	0.51	5.1
15, .....	8.7	8.3	0.38	5.4	9.0	8.5	0.21	5.0	13.7	12.7	0.62	6.1
17½, .....	10.1	9.6	0.44	6.2	10.5	9.9	0.25	5.8	16.0	14.9	0.72	7.1
20, .....	11.6	11.0	0.50	7.1	12.0	11.3	0.28	6.6	18.2	17.0	0.82	8.1
25, .....	14.5	13.8	0.63	8.9	15.0	14.1	0.35	8.3	22.2	21.2	1.03	10.2
Hays.	Oat and pea hay, 1:4.1.				Hungarian, 1:10.0.				Red clover hay, 1:5.9.			
2½, .....	2.2	2.0	0.28	1.2	2.1	1.9	0.12	1.2	2.1	2.0	0.18	1.0
5, .....	4.4	4.1	0.56	2.3	4.2	3.9	0.25	2.4	4.2	3.9	0.36	2.1
7½, .....	6.6	6.1	0.84	3.5	6.3	5.9	0.37	3.6	6.4	5.9	0.53	3.2
10, .....	8.9	8.2	1.12	4.6	8.4	7.8	0.49	4.9	8.5	7.9	0.71	4.2
12½, .....	11.1	10.2	1.40	5.8	10.4	9.7	0.62	6.2	10.6	9.8	0.89	5.2
15, .....	13.3	12.3	1.68	6.9	12.5	11.7	0.74	7.4	12.7	11.8	1.07	6.3
17½, .....	15.5	14.3	1.96	8.1	14.6	13.6	0.86	8.6	14.8	13.7	1.24	7.3
20, .....	17.7	16.4	2.24	9.2	16.7	15.6	0.98	9.8	16.9	15.7	1.42	8.3
25, .....	22.1	20.5	2.80	11.6	20.9	19.5	1.23	12.3	21.2	19.6	1.78	10.5
Hays, etc.	Alsike clover hay, 1:5.5.				Clover rowen hay, 1:4.9.				Barley straw, 1:61.0.			
2½, .....	2.3	2.1	0.21	1.2	2.3	2.1	0.21	1.0	2.1	2.0	0.02	1.1
5, .....	4.5	4.1	0.42	2.3	4.6	4.2	0.43	2.1	4.3	4.0	0.04	2.1
7½, .....	6.8	6.2	0.63	3.5	6.9	6.4	0.64	3.2	6.4	6.0	0.05	3.2
10, .....	9.0	8.2	0.84	4.6	9.2	8.5	0.85	4.2	8.6	8.0	0.07	4.3
12½, .....	11.3	10.3	1.05	5.8	11.5	10.6	1.07	5.2	10.7	10.0	0.09	5.3
15, .....	13.5	12.3	1.26	6.9	13.8	12.7	1.28	6.3	12.9	12.0	0.11	6.4
17½, .....	15.8	14.3	1.47	8.1	16.0	14.8	1.49	7.3	15.0	14.0	0.12	7.5
20, .....	18.1	16.4	1.68	9.2	18.3	16.9	1.70	8.3	17.2	16.0	0.14	8.5
25, .....	22.6	20.5	2.10	11.6	22.9	21.2	2.13	10.5	21.5	20.0	0.19	10.7



TABLE II.—POUNDS OF TOTAL DRY MATTER, TOTAL ORGANIC MATTER AND DIGESTIBLE INGREDIENTS—  
*Continued.*

Pounds of Fodder.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.
Straws.	Oat straw, 1:38.3.				Wheat straw, 1:69.0.				Rye straw, 1:69.0.			
2½, .....	2.3	2.1	0.03	1.2	2.3	2.1	0.01	0.9	2.3	2.2	0.02	1.0
5, .....	4.6	4.3	0.06	2.3	4.5	4.3	0.02	1.9	4.6	4.5	0.03	2.1
7½, .....	6.8	6.4	0.09	3.5	6.8	6.4	0.03	2.8	7.0	6.7	0.05	3.1
10, .....	9.1	8.6	0.12	4.6	9.0	8.6	0.04	3.7	9.3	9.0	0.06	4.1
12½, .....	11.4	10.7	0.15	5.8	11.3	10.7	0.05	4.6	11.6	11.2	0.08	5.2
15, .....	13.9	12.9	0.18	6.9	13.5	12.9	0.06	5.6	13.9	13.4	0.09	6.2
17½, .....	16.0	15.0	0.21	8.1	15.8	15.0	0.07	6.5	16.3	15.7	0.11	7.2
20, .....	18.2	17.2	0.24	9.2	18.1	17.2	0.08	7.4	18.7	17.9	0.12	8.3
25, .....	22.7	21.5	0.30	11.5	22.6	21.6	0.10	9.3	23.2	22.4	0.15	10.4
Grains.	Corn meal, 1:11.3.				Corn and cob meal, 1:13.9.				Oats, 1:6.2.			
¼, .....	0.2	0.2	0.02	0.2	0.2	0.2	0.01	0.2	0.2	0.2	0.02	0.1
½, .....	0.4	0.4	0.03	0.4	0.4	0.4	0.02	0.3	0.4	0.4	0.05	0.3
1, .....	0.9	0.8	0.06	0.7	0.9	0.8	0.05	0.7	0.9	0.9	0.09	0.6
3, .....	1.7	1.7	0.10	1.4	1.7	1.7	0.10	1.3	1.8	1.7	0.18	1.1
3, .....	2.6	2.5	0.19	2.1	2.6	2.5	0.14	2.0	2.7	2.6	0.28	1.7
4, .....	3.4	3.3	0.25	2.9	3.4	3.3	0.19	2.7	3.6	3.4	0.37	2.3
5, .....	4.3	4.2	0.32	3.6	4.3	4.2	0.24	3.4	4.5	4.3	0.46	2.8
7½, .....	6.4	6.3	0.48	5.4	6.4	6.3	0.36	5.1	6.7	6.5	0.69	4.3
10, .....	8.5	8.4	0.63	7.1	8.5	8.4	0.48	6.7	8.9	8.6	0.92	5.7
Grains, etc.,	Provender, (½ ½) 1:8.4.				Provender (as sold in New England), 1:9.4.				Oat hulls, 1:18.2.			
¼, .....	0.2	0.2	0.02	0.2	0.2	0.2	0.02	0.2	0.2	0.2	0.01	0.1
½, .....	0.4	0.4	0.04	0.3	0.4	0.4	0.03	0.3	0.5	0.4	0.02	0.3
1, .....	0.9	0.9	0.08	0.6	0.9	0.9	0.07	0.6	0.9	0.9	0.03	0.5
2, .....	1.7	1.7	0.15	1.3	1.8	1.7	0.14	1.3	1.9	1.7	0.05	0.9
3, .....	2.6	2.6	0.23	1.9	2.7	2.6	0.20	1.9	2.8	2.6	0.08	1.4
4, .....	3.5	3.4	0.31	2.6	3.5	3.4	0.27	2.5	3.7	3.4	0.10	1.9
5, .....	4.4	4.3	0.39	3.2	4.4	4.3	0.34	3.2	4.6	4.3	0.13	2.4
7½, .....	6.5	6.4	0.58	4.9	6.6	6.5	0.51	4.8	7.0	6.5	0.20	3.5
10, .....	8.7	8.5	0.77	6.5	8.8	8.8	0.68	6.4	9.3	8.6	0.26	4.7



TABLE II.—POUNDS OF TOTAL DRY MATTER, TOTAL ORGANIC MATTER AND DIGESTIBLE INGREDIENTS—  
*Continued.*

Pounds of Fodder.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.
By-products, etc.	Quaker dairy feed, 1:4.6.				H. O. dairy feed, 1:3.3.				Victor corn and oat feed, 1:10.1.			
1/4, .....	0.2	0.2	0.03	0.1	0.2	0.2	0.04	0.1	0.2	0.2	0.02	0.2
1/2, .....	0.5	0.4	0.05	0.3	0.5	0.4	0.07	0.2	0.5	0.4	0.03	0.3
1, .....	0.9	0.9	0.11	0.5	0.9	0.9	0.15	0.5	0.9	0.9	0.06	0.6
2, .....	1.8	1.7	0.22	1.0	1.8	1.7	0.29	1.0	1.8	1.7	0.13	1.3
3, .....	2.8	2.6	0.33	1.5	2.7	2.6	0.44	1.5	2.7	2.6	0.19	1.9
4, .....	3.7	3.5	0.44	2.0	3.6	3.5	0.59	2.0	3.6	3.4	0.25	2.5
5, .....	4.6	4.4	0.55	2.5	4.6	4.4	0.74	2.5	4.5	4.3	0.32	3.2
7 1/2, .....	6.9	6.5	0.82	3.8	6.8	6.5	1.10	3.7	6.8	6.5	0.47	4.8
10, .....	9.2	8.7	1.09	5.0	9.1	8.7	1.47	4.9	9.0	8.6	0.63	6.4
By-products, etc.	H. O. horse feed, 1:6.4.				Barley, 1:8.0.				Barley screenings, 1:7.7.			
1/4, .....	0.2	0.2	0.02	0.1	0.2	0.2	0.02	0.2	0.2	0.2	0.02	0.2
1/2, .....	0.5	0.4	0.05	0.3	0.4	0.4	0.0.	0.3	0.4	0.4	0.04	0.3
1, .....	0.9	0.9	0.09	0.6	0.9	0.9	0.09	0.7	0.9	0.8	0.09	0.7
2, .....	1.8	1.7	0.18	1.2	1.8	1.7	0.17	1.4	1.8	1.7	0.17	1.3
3, .....	2.7	2.6	0.28	1.8	2.7	2.6	0.26	2.1	2.6	2.5	0.26	2.0
4, .....	3.6	3.5	0.37	2.4	3.6	3.5	0.35	2.8	3.5	3.4	0.34	2.7
5, .....	4.5	4.4	0.46	2.9	4.5	4.4	0.44	3.5	4.4	4.2	0.43	3.3
7 1/2, .....	6.8	6.5	0.69	4.4	6.7	6.5	0.65	5.2	6.6	6.3	0.65	6.0
10, .....	9.0	8.7	0.92	5.9	8.9	8.7	0.87	6.9	8.8	8.4	0.86	6.6
By-products.	Wheat bran, 1:3.8.				Wheat middlings, 1:4.6.				Wheat screenings, 1:5.2.			
1/4, .....	0.2	0.2	0.03	0.1	0.2	0.2	0.03	0.1	0.2	0.2	0.02	0.1
1/2, .....	0.4	0.4	0.06	0.2	0.4	0.4	0.06	0.3	0.4	0.4	0.05	0.2
1, .....	0.9	0.8	0.12	0.5	0.9	0.9	0.13	0.6	0.9	0.9	0.10	0.5
2, .....	1.8	1.6	0.24	1.0	1.8	1.7	0.25	1.2	1.8	1.7	0.20	1.0
3, .....	2.6	2.5	0.36	1.4	2.6	2.6	0.38	1.7	2.7	2.6	0.29	1.5
4, .....	3.5	3.3	0.48	1.8	3.5	3.4	0.50	2.3	3.5	3.4	0.39	2.0
5, .....	4.4	4.1	0.60	2.3	4.4	4.3	0.63	2.9	4.4	4.3	0.49	2.5
7 1/2, .....	6.6	6.2	0.90	3.4	6.6	6.4	0.94	4.4	6.6	6.5	0.74	3.8
10, .....	8.8	8.2	1.20	4.6	8.8	8.6	1.25	5.8	8.8	8.6	0.98	5.1

TABLE II.—POUNDS OF TOTAL DRY MATTER, TOTAL ORGANIC MATTER AND DIGESTIBLE INGREDIENTS—  
*Continued.*

Pounds of Fodder.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.
By-products.	Mixed (wheat) feed, 1:3.9.				Red-dog flour, 1:3.3.				Rye, 1:7.8.			
¼, .....	0.2	0.2	0.03	0.1	0.2	0.2	0.04	0.1	0.2	0.2	0.02	0.2
½, .....	0.4	0.4	0.07	0.3	0.5	0.4	0.09	0.3	0.4	0.4	0.04	0.3
1, .....	0.9	0.8	0.13	0.5	0.9	0.9	0.18	0.6	0.9	0.9	0.09	0.7
2, .....	1.8	1.7	0.27	1.0	1.8	1.7	0.36	1.2	1.8	1.7	0.18	1.4
3, .....	2.7	2.5	0.40	1.5	2.7	2.6	0.53	1.7	2.7	2.6	0.27	2.1
4, .....	3.6	3.3	0.53	2.1	3.6	3.5	0.71	2.3	3.5	3.5	0.36	2.8
5, .....	4.5	4.3	0.67	2.6	4.6	4.4	0.89	2.9	4.4	4.4	0.46	3.5
7½, .....	6.7	6.3	1.00	3.8	6.8	6.5	1.34	4.4	6.6	6.5	0.67	5.2
10, .....	8.9	8.4	1.33	5.2	9.1	8.7	1.78	5.8	8.8	8.7	0.89	6.9
By-products.	Rye bran, 1:5.1.				Cottonseed meal, 1:1.0.				Cottonseed feed, 1:5.6.			
¼, .....	0.2	0.2	0.03	0.2	0.2	0.2	0.10	0.1	0.2	0.2	0.02	0.1
½, .....	0.4	0.4	0.06	0.3	0.5	0.4	0.20	0.2	0.4	0.4	0.04	0.2
1, .....	0.9	0.9	0.12	0.6	0.9	0.9	0.40	0.4	0.9	0.9	0.08	0.4
2, .....	1.8	1.7	0.25	1.3	1.8	1.7	0.80	0.8	1.8	1.1	0.16	0.9
3, .....	2.7	2.6	0.37	1.9	2.8	2.6	1.20	1.2	2.7	2.6	0.25	1.3
4, .....	3.5	3.4	0.49	2.5	3.7	3.4	1.60	1.6	3.5	3.4	0.32	1.8
5, .....	4.4	4.3	0.62	3.1	4.6	4.3	2.00	2.0	4.4	4.3	0.40	2.2
7½, .....	6.6	6.4	0.92	4.7	6.9	6.4	3.00	3.0	6.6	6.4	0.59	3.3
10, .....	8.8	8.5	1.23	6.3	9.2	8.5	4.00	4.0	8.8	8.5	0.79	4.4
By-products.	Cottonseed hulls,—				Linseed meal (O. P.), 1:1.5.				Linseed meal (N. P.), 1:1.3.			
¼, .....	0.2	0.2	.....	0.1	0.2	0.2	0.08	0.1	0.2	0.2	0.08	0.1
½, .....	0.4	0.4	.....	0.2	0.5	0.4	0.15	0.2	0.4	0.4	0.16	0.2
1, .....	0.9	0.9	.....	0.4	0.9	0.8	0.31	0.5	0.9	0.8	0.32	0.4
2, .....	1.8	1.7	.....	0.7	1.8	1.7	0.62	1.0	1.8	1.7	0.65	0.8
3, .....	2.7	2.6	.....	1.1	2.7	2.5	0.92	1.4	2.7	2.5	0.97	1.3
4, .....	3.6	3.4	.....	1.5	3.6	3.4	1.23	1.8	3.6	3.4	1.30	1.7
5, .....	4.5	4.3	.....	1.8	4.9	4.2	1.54	2.3	4.5	4.2	1.62	2.1
7½, .....	6.7	6.5	.....	2.7	6.8	6.3	2.31	3.4	6.7	6.3	2.43	3.2
10, .....	8.9	8.6	.....	3.7	9.0	8.4	3.08	4.6	8.9	8.4	3.25	4.2

TABLE II.—POUNDS OF TOTAL DRY MATTER, TOTAL ORGANIC MATTER AND DIGESTIBLE INGREDIENTS—  
*Continued.*

Pounds of Fodder.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.	Organic matter.	Protein.	Carbohydrates, etc.	Total dry matter.
By-products.	Flax meal, 1:1.4.				Gluten meal (Chicago) 1:1.5.				Gluten meal (Cream),			
¼, .....	0.2	0.2	0.08	0.2	0.2	0.2	0.08	0.1	0.2	0.2	0.07	0.1
½, .....	0.4	0.4	0.16	0.2	0.4	0.4	0.16	0.2	0.4	0.4	0.15	0.2
1, .....	0.9	0.8	0.32	0.4	0.9	0.9	0.32	0.5	0.9	0.9	0.39	0.5
2, .....	1.8	1.7	0.64	0.9	1.8	1.7	0.64	0.9	1.8	1.8	0.59	1.0
3, .....	2.7	2.5	0.96	1.3	2.6	2.6	0.96	1.4	2.7	2.7	0.89	1.5
4, .....	3.6	3.4	1.28	1.7	3.5	3.4	1.28	1.9	3.6	3.6	1.19	2.1
5, .....	4.5	4.2	1.60	2.2	4.4	4.3	1.60	2.3	4.5	4.5	1.49	2.6
7½, .....	6.7	6.3	2.40	3.3	6.6	6.5	2.40	3.5	6.7	6.7	2.43	3.9
10, .....	8.9	8.4	3.21	4.3	8.8	8.6	3.21	4.7	9.0	8.9	2.97	5.1
By-products.	Gluten meal (King), 1:1.9.				Gluten feed (Buffalo or Marshalltown), 1:2.4.				Gluten feed (Diamond or Rockford) 1:3.0.			
¼, .....	0.2	0.2	0.07	0.1	0.2	0.2	0.06	0.1	0.2	0.2	0.05	0.2
½, .....	0.5	0.5	0.15	0.3	0.4	0.4	0.12	1.3	0.5	0.4	0.10	0.3
1, .....	0.9	0.9	0.30	0.6	0.9	0.9	0.23	0.6	0.9	0.9	0.20	0.6
2, .....	1.9	1.7	0.59	1.1	1.8	1.8	0.47	1.1	1.8	1.8	0.41	1.2
3, .....	2.8	1.8	0.89	1.7	2.7	2.6	0.70	1.7	2.7	2.7	0.61	1.9
4, .....	3.7	3.7	1.19	2.3	3.6	3.5	0.93	2.3	3.6	3.6	0.81	2.5
5, .....	4.6	4.6	1.49	2.8	4.5	4.4	1.17	2.8	4.6	4.5	1.02	3.1
7½, .....	6.9	6.9	2.23	4.3	6.8	6.6	1.75	4.3	6.8	6.8	1.52	4.7
10, .....	6.3	9.2	2.97	5.7	9.0	8.8	2.33	5.7	9.1	9.0	2.03	6.2
By-products.	Hominy chop, 1:9.2.				Starch feed, wet, 1:4.9.				Dried brewers grains, 1:3.0.			
¼, .....	0.2	0.2	0.02	0.2	0.1	0.1	0.01	0.1	0.2	0.2	0.04	0.1
½, .....	0.5	0.4	0.04	0.4	0.2	0.2	0.03	0.2	0.5	0.4	0.08	0.3
1, .....	0.9	0.9	0.09	0.8	0.3	0.3	0.05	0.3	0.9	0.9	0.16	0.5
2, .....	1.8	1.8	0.17	1.6	0.7	0.6	0.11	0.5	1.8	1.8	0.31	0.9
3, .....	2.8	2.7	0.26	2.4	1.0	1.0	0.16	0.8	2.8	2.6	0.47	1.4
4, .....	3.7	3.6	0.35	3.2	1.4	1.4	0.22	1.1	3.7	3.5	0.63	1.9
5, .....	4.6	4.5	0.44	4.0	1.7	1.7	0.27	1.3	4.6	4.4	0.79	2.4
7½, .....	6.9	6.7	0.65	6.0	2.6	2.6	0.41	1.7	6.9	6.6	1.18	3.5
10, .....	9.2	8.9	0.87	8.0	3.5	3.4	0.54	2.6	9.2	8.8	1.57	4.7

TABLE II.—POUNDS OF TOTAL DRY MATTER, TOTAL ORGANIC MATTER AND DIGESTIBLE INGREDIENTS—  
*Continued.*

Pounds of Fodder.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.	Total dry matter.	Organic matter.	Protein.	Carbohydrates, etc.	Carbohydrates, etc.	Protein.	Organic matter.	Total dry matter.
By-products.	Atlas gluten meal, 1:2.6.				Malt sprouts, 1:2.2.				Pea meal, 1:3.2.			
¼, .....	0.2	0.2	0.06	0.2	0.2	0.2	0.05	0.1	0.2	0.2	0.04	0.1
½, .....	0.5	0.4	0.12	0.3	0.4	0.4	0.09	0.2	0.4	0.4	0.08	0.3
1, .....	0.9	0.9	0.25	0.6	0.9	0.8	0.19	0.4	0.9	0.9	0.17	0.5
2, .....	1.8	1.8	0.49	1.3	1.8	1.7	0.37	0.8	1.8	1.7	0.33	1.1
3, .....	2.8	2.7	0.74	1.9	2.7	2.5	0.56	1.2	2.7	2.6	0.50	1.6
4, .....	3.7	3.6	0.98	2.6	3.6	3.3	0.74	1.6	3.6	3.5	0.67	2.1
5, .....	4.6	4.5	1.23	3.2	4.5	4.2	0.93	2.0	4.5	4.4	0.84	2.7
7½, .....	6.9	6.7	1.85	4.9	6.7	6.3	1.40	3.0	6.7	6.5	1.26	4.0
10, .....	9.2	9.0	2.46	6.5	9.0	8.4	1.86	4.0	9.0	8.7	1.68	5.3

## CONCENTRATED COMMERCIAL FEEDING STUFFS.

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### AN ACT

Regulating the sale of concentrated commercial feeding stuffs, defining concentrated feeding stuffs, prohibiting their adulteration, providing for the collection of samples, the expenses of the enforcement of the law, and fixing penalties for its violation.

Section 1. Be it enacted, &c., That every lot or parcel of any concentrated commercial feeding stuff, as defined in section two of this act, used for feeding domestic animals, sold, offered or exposed for sale within this State, shall have affixed thereto, in a conspicuous place on the outside thereof, a legible and plainly printed statement clearly and truly certifying the number of net pounds of feeding stuff contained therein; the name, brand or trade mark under which the article is sold; the name and address of the manufacturer or importer, and a statement of the percentage it contains of crude fat and of crude protein, both constituents to be determined by the methods adopted at the time by the Association of Official Agricultural Chemists of the United States. Whenever any concentrated commercial feeding stuff is sold at retail, in bulk, or in sacks belonging to the purchaser, the agent or dealer, upon request of the purchaser, shall furnish to him the certified statement named in this section.

Section 2. The term "concentrated commercial feeding stuffs," as used in this act, shall include linseed meals, cotton seed meals, gluten meals, maize feeds, starch feeds, sugar feeds, dried brewer's grains, malt sprouts, hominy foods, cerealine feeds, rice meals, ground beef or fish scraps, and all other materials of similar nature, but shall not include hays and straws, the grinding together of pure whole grains, nor the unmixed meals made directly from the entire grains of wheat, rye, barley, oats, Indian corn, buckwheat, or broom corn; neither shall it include wheat, rye or buckwheat bran, or middlings not mixed with other substances, and sold separately as distinct articles of commerce.

Section 3. No foreign mineral substance, nor substance injurious to the health of domestic animals, shall be mixed with any feeding stuff sold, or offered, or exposed for sale in this State.



Section 4. Each and every manufacturer, importer, agent or seller of any concentrated feeding stuff shall, upon request, file in the office of the Secretary of Agriculture a certified copy of the statement named in section one of this act.

Section 5. Each and every manufacturer, importer, agent or person, selling, offering or exposing for sale in this State any concentrated commercial feeding stuff, as defined in section two of this act, without the statement required by section one of this act; or affixing a statement or guarantee which is false in any particular, or in relation to which the provisions of all of the foregoing sections have not been fully complied with, shall, for every such offense, forfeit and pay the sum of one hundred dollars, which shall be recoverable with costs, including the expenses of analysis, by any person suing in the name of the Commonwealth, as debts of like amount are by law recoverable: Provided, That the Secretary of Agriculture shall, together with his deputies, agents and assistants, be charged with the enforcement of this act, and shall have full access to all places of business, mills, buildings, carriages, cars, vessels and packages, of whatsoever kind, used in the manufacture, importation or sale of any concentrated commercial feeding stuff; and shall also have power and authority to open any package containing or supposed to contain any concentrated commercial feeding stuff, and take therefrom samples for analysis, upon tendering the value of said sample; and whenever requested, said samples shall be taken in the presence of the party or parties interested or their representative, shall be thoroughly mixed and then divided into two samples and put in glass vessels and carefully sealed, and a label placed upon each vessel stating the name or brand of the feeding stuff or material sampled, the name of the manufacturer when possible, the name of the party from whose stock the sample was taken, and the time and the place of taking, said labels to be signed by the Secretary of Agriculture or his agent, and by the party or parties interested or their representative, if present, at the taking of the samples. One of said duplicate samples shall be retained by the Secretary of Agriculture or his agent, and the other by the party whose stock was sampled.

Section 6. All necessary expenses under the provisions of this act shall, after approval in writing by the Governor and the Secretary of Agriculture, be paid by the State Treasurer upon the warrant of the Auditor General, in the manner now provided by law: Provided, That not more than five thousand dollars shall be expended in any one year, and all penalties and costs for the violation of the provisions of this act shall be paid to the said Secretary of Agriculture or his agent, and by him immediately covered into the State Treasury, to be kept as a separate fund, for the use of the Department in carrying out the provisions of this act, and to be drawn out upon war-



rants signed by the Secretary of Agriculture and the Auditor General.

Section 7. Every person who violates any of the provisions of this act shall also be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine of not less than fifty dollars nor more than one hundred dollars, or by imprisonment in the county jail for not less than ten nor more than thirty days, or both fine and imprisonment for the first offense, and a fine of one hundred dollars and imprisonment for every subsequent offense: Provided, That all fines and costs, including the expense of analysis, imposed and recovered under this section shall be covered into the State Treasury, as provided by section six of this act.

Section 8. Magistrates and justices of the peace throughout this Commonwealth shall have jurisdiction to hear and determine actions arising from violation of the provisions of this act, and to hold for court or impose the penalties prescribed therein, subject to appeal as the law shall direct.

Section 9. This act shall take effect on the first day of October, one thousand nine hundred and one.

Section 10. All acts or parts of acts inconsistent with the provisions of this act are hereby repealed.

Approved—The 25th day of April, A. D. 1901.

